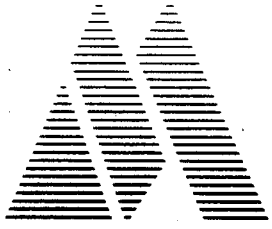
4716

Folk 2nd

SOIL INVESTIGATION
MCGRANAHAN AND CARLSON
COMMERCE CENTER II
SANTA FE SPRINGS, CALIFORNIA

APRIL 21, 1989

FINAL REPORT



McLaren Environmental Engineering

4716

Talk See

SOIL INVESTIGATION
MCGRANAHAN AND CARLSON
COMMERCE CENTER II
SANTA FE SPRINGS, CALIFORNIA

APRIL 21, 1989

FINAL REPORT

McLaren

McLaren

April 21, 1989

Mr. Stephen M. Carlson
McGranahan Carlson and Company
1000 Corporate Pointe, Suite 105
Culver City, California 90230

Dear Mr. Carlson:

SOIL INVESTIGATION AT COMMERCE CENTER II: FINAL REPORT

The attached report describes the results of our recent soil investigations at the Commerce Center II property in Sante Fe Springs, California. This report also summarizes the results of previous soil investigations at the site. Based on the data contained in these reports we have estimated that the volume of soil in place which will require remediation prior to development is approximately 121,000 cubic yards (146,000 cubic yards excavated). This estimate does not include soil which may require remediation as a result of underground pipeline leaks or random discharge of crude oil not associated with visible surface features. We have included a contingency of 25 percent to account for this additional soil, bringing the total estimated volume of soil in place requiring remediation to 152,000 cubic yards (182,000 cubic yards excavated).

The breakdown of the estimated volume soil including the contingency for additional soil in each area is as follows:

Area 2	32,000 cy (in place);	39,000 cy (excavated)
Area 3	20,000 cy (in place);	24,000 cy (excavated)
Area 4	18,000 cy (in place);	21,000 cy (excavated)
Area 5A	39,000 cy (in place);	47,000 cy (excavated)
Area 5B	43,000 cy (in place);	52,000 cy (excavated)

If you have any questions about this report, please contact me at (714) 756-2667.

Very truly yours,

Dennis Dineen

Dennis Dineen,
Principal Scientist

cc: Grant B. Cooper, Jr.

2855 Pullman Street, Santa Ana, CA 92705 (714) 756-2667
Headquarters: 11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

SOIL INVESTIGATION
MCGRANAHAN AND CARLSON
COMMERCE CENTER II
SANTA FE SPRINGS, CALIFORNIA

APRIL 21, 1989

FINAL REPORT

TABLE OF CONTENTS

LIST OF TABLES

PAGE

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This report summarizes the results of all soil investigations conducted at the McGranahan and Carlson Commerce Center II (Commerce Center) located in Santa Fe Springs, California (Figure 1). The purpose of the soil investigation was to estimate the volume of soil containing crude oil which would require remediation prior to the planned development of the property.

The results of previous work conducted on this parcel are contained in the following reports:

- **A Study of Abandoned Oil and Gas Wells and Methane and Other Hazardous Gas Accumulations.** Final report prepared for Department of Conservation Division of Oil and Gas. GeoScience Analytical Inc., October 10, 1986.

- **Site Investigation at the Mobil Oil Co./Santa Fe Energy Company facility in Santa Fe Springs California.** Ecology and Environment Inc., January 20, 1988.

- **Further Evaluation of Hazardous Gas Potential in the Santa Fe Spring Oil Fields - Final Report.** Geoscience Analytical Inc., January 28, 1988.

- **Draft Final Phase I Site Assessment - Santa Fe Energy Mobil Oil Field Properties.** Ebasco Services Incorporated, August 1988.

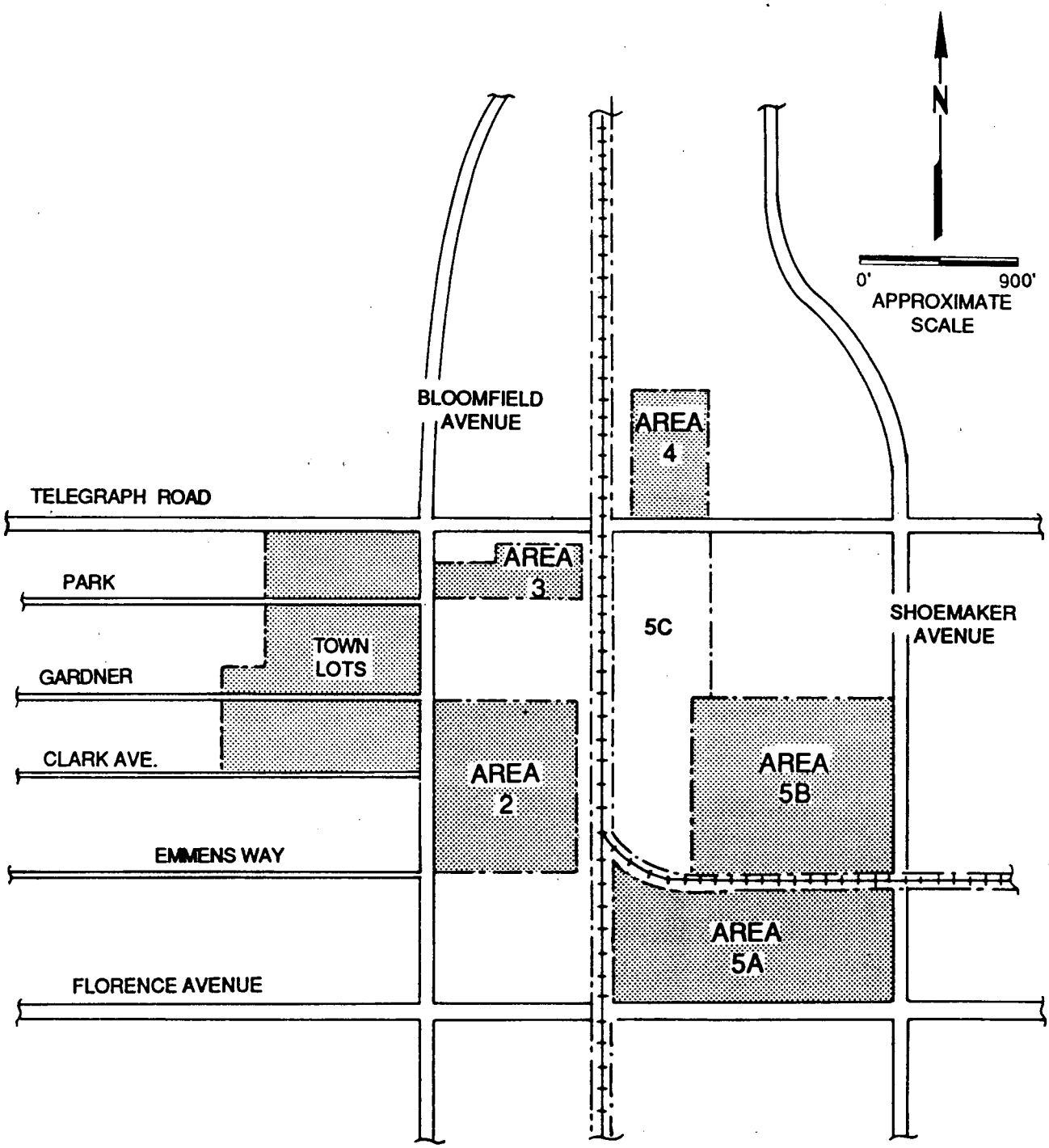
- **Soil Investigation - Proposed Industrial Development Located Between Norwalk Boulevard and Shoemaker Avenue and Florence Avenue and Romandel Street in the City of Santa Fe Springs, California.** Western Laboratories, October 21, 1988.

- **Phase II Site Assessment Final Report - Santa Fe Energy Mobil Oil Field Properties.** Ebasco Services Incorporated, November 1988.

- **Psomas Digitized Base Maps - Topographic survey for existing oil sumps.** November 17, 1988.

- **Soil Investigation at McGranahan and Carlson Commerce Center II -Santa Fe Springs, California.** McLaren Environmental Engineering, March 2, 1989.

FIGURE 1
McGRANAHAN CARSON
COMMERCE CENTER II
SITE PLAN



Aerial photographs documented the existence of 45 sumps on the Commerce Center site. The Ebasco report identified additional sumps resulting in a combined total of as many as 56 sumps on the site. The 45 sump locations from the aerial photographs were digitized on a computer generated base map by Psomas Engineering which is the basis of the figures in this report. Seven additional sumps which were indicated by the Ebasco report and which were supported by analytical data and field observations showing high petroleum hydrocarbon concentrations in the soil are also shown on the figures in this report. The results of soil investigations at these sumps provide the basis for the estimates of the volume of soil requiring remediation.

The sumps which were identified on the property were categorized into three groups on the basis of past usage:

1. Well development sumps (mud pits) were pits dug adjacent to wells during well construction to receive discharged drilling muds, oil, and water from well construction and development. These sumps were observed on the 1928 aerial photograph when the wells were newly constructed. After the wells were in operation, the sumps were backfilled with native soil.

2. Oil/water separation sumps were typically double sumps used to separate recoverable oil from water and were centrally located within a group of producing wells. These sumps were observed on aerial photographs from 1928 through 1945 or later.

3. Tank bottom sludge sumps were located adjacent to above ground tanks used to store the pumped product. Sludge which accumulated in the tank bottoms was periodically cleaned from the tanks and discharged into the adjacent sumps. These sumps were observed on aerial photographs from 1928 through 1945 or later.

It was assumed that the distribution of crude oil in the soil at these former sump locations was directly related to the past usage of the sump, i.e., that concentrations would be low to moderate in the well development and oil/water separation sumps and high in the tank bottom sludge sumps. This assumption was based on the fact that the well development sumps were in use for relatively short periods during well construction and development and that drilling muds and product would be recycled or recovered. Similarly, the oil/water separation sumps were designed to recover as much product as possible and relatively little would be left to migrate into the soil. On the other hand, the sumps used to collect tank bottom sludges were in use for 20 years or longer during which time the petroleum hydrocarbons could have migrated into the underlying soil.

SCOPE OF INVESTIGATION

The goal of this investigation was to sample as many of the documented sumps (located on the Psomas survey) as possible. The sumps were investigated by locating the center of the sump from the Psomas survey and digging a trench in the center of the sump. If field observations

indicated the presence of crude oil in this trench, two additional trenches were dug at opposite ends of the sump such that the center of the trenches cut across the boundary of the sump as indicated in the Psomas survery. Two soil samples were collected from each trench to confirm the field observations: one from the soil where petroleum hydrocarbons were observed and a second sample from beneath that soil where hydrocarbons were not observed. Soil borings were then drilled at those locations where petroleum hydrocarbons were documented at the bottom of the trench.

Trenches were dug in 26 of the 45 sumps which were plotted on the Psomas survey. Trenches were approximately 15 to 20 feet long and 12 to 15 feet deep. Soil borings to 60 feet deep were drilled in six sumps that were identified as tank bottom sludge collection sumps. Between the current investigations and previous work on this site, over two thirds (31/45) of the sumps documented by aerial photographs and 60 percent (31/52) of the sumps including seven from the Ebasco report were investigated. The remaining sumps were not investigated because of underground utilities or surface obstructions. Other sumps which were shown in the Ebasco report were not investigated because the locations of these Ebasco sumps were not clearly identified or were not supported by field observations.

Two soil samples were collected at discrete depths from each trench and were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 418.1 to confirm field observations made during the trenching operations. In the soil borings, samples were collected at approximately 5-foot intervals. These soil samples were also analyzed for TPH using EPA Method 418.1. Total priority pollutant organics (EPA Methods 8080, 8240 and 8270) were conducted on selected samples collected from sumps where TPH exceeded 1,000 ppm. These samples were collected from discolored sludge material at depths of approximately 10 to 15 feet to determine the presence of priority pollutants in the sludge material and from depths of 40 to 50 feet below ground surface to determine whether priority pollutants have migrated to depth. Figures 2 through 6 show the sump locations in each area on the property.

RESULTS

Field observations and total petroleum hydrocarbon analytical results are summarized in Table 1. Data from the priority pollutant organic analyses are summarized in Table 2. Laboratory data sheets and chain-of-custody forms for trenching operations are presented in Appendix A. Laboratory data sheet and chain-of-custody forms for drilling operations are presented in Appendix B. Soil boring logs are included in Appendix C. Results of laboratory data, field observations, and estimated volumes of soil requiring remediation in each area are discussed in the following section.

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 2	A/B	SB-3	1/27/89	23815	7.5-8.0	SLUDGE	36000	
				23816	12.0-12.5	SM	23000	
				23817	15.0-15.5	SM	20	
				23818	17.5-18.0	SM	1300	
				23819	20.5-21.0	SM	2500	
		SB-8	3/24/89	24693	25.5-26.0	SW	120	
				24694	30.5-31.0	SW	10	
				24695	35.5-36.0	SM	<5	
				24696	40.5-41.0	SW	<5	
				24697	45.5-46.0	SW	<5	
				24698	50.5-51.0	SW	80	
				24699	55.5-56.0	SW	80	
				24700	60.5-61.0	SW	10	
	C	T1	3/13/89	T1A2CS1	6	CL	270	S
				T1A2CS3	10	SM	480	O,S
		T2	3/13/89	T2A2CS1	6	CL	280	O,S
				T2A2CS3	12	SM	<5	
		T3	3/13/89	T3A2CS1	5.5	CL	130	O,S
				T3A2CS3	12	SM	610	O,S
	D	T1	3/16/89	T1A2DS1	5	SM	1000	O,S
				T1A2DS3	13	SM	<5	O,S
	E	T1	3/16/89	T1A2ES1	6	SM	180	O,S
				T1A2ES3	13	SM	<5	
	F	T1	3/16/89	T1A2FS1	5	SM	800	O,S
				T1A2FS3	12	SM	50	S
	G	T1	3/15/89	T1A2GS1	5.5	CL	130	O,S
				T1A2GS3	13	SM	<5	

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 2	H	T1	3/15/89	T1A2HS1	5.5	CL	520	O,S
				T1A2HS3	13	SM	<5	
	I/J	T1	3/13/89	T2A2I/JS1	6	CL	200	O,S
				T1A2I/JS3	10	SM	90	O.S
		T2	3/13/89	T2A2I/JS1	6	CL	<5	
				T2A2I/JS3	12	SM	<5	
		T3	3/13/89	T3A2I/JS1	6	CL	<5	
				T3A2I/JS3	12.5	SN	<5	
	K	T1	3/13/89	T1A2KS1	6	CL	120	
				T1A2KS3	12.5	SM	20	
		T2	3/13/89	T2A2KS7	3	CL	790	O,S
				T2A2KS1	6.5	CL	120	
				T2A2KS5	12	SM	<5	
		T3	3/13/89	T3A2KS1	6.5	CL	<5	
				T3A2KS3	12	SM	<5	
		T4	3/13/89	T4A2KS1	5.5	CL	110	
				T4A2KS3	12	SM	<5	
	L	SB-4	1/27/89	23820	6-6.5	CL	<5	
				23821	10.5-11.0	CL	<5	
				23822	13.5-14.0	SM	<5	
				23823	15.0-15.5	SM	<5	
AREA 3	A	T1	3/13/89	T1A3AS1	6	CL	210	
				T1A3AS5	11	SM	10	
				T1A5AS3	13	SM	340	
	B	---	---	---	---	---	---	
	C	---	---	---	---	---	---	

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 3	D	---	---	---	---	---	---	
	E	T1	3/10/89	T1A3ES1	6	SM	4000	O,S
				T1A3ES3	8.5	SM	10	S
				T1A3ES5	10.5	SM	<5	O,S
		T2	3/13/89	T2A3ES1	6	SM	<5	
				T2A3ES3	12	SM	900	O,S
		T3	3/13/89	T3A3ES1	6.5	SM	2600	O,S
				T3A3ES3	12.5	SM	<5	O,S
		SB-9	3/23/89	24701	5.5-6.0	SM	300	
				24702	10.5-11.0	SM	20	
				24703	15.5-16.0	SM	<5	
				24704	20.5-21.0	SM	<5	
				24705	25.5-26.0	SM	<5	
				24706	30.5-31.0	SM	<5	
				24707	35.5-36.0	SM	<5	
				24708	40.5-41.0	SP	<5	
				24709	50.5-51.0	SP	<5	
				24710	60.5-61.0	SP	20	
	F	T1	3/16/89	T1A3FS1	5	SM	2700	O,S
				T1A3FS3	13	CL	10	
AREA 4	A	T1	3/10/89	T1A4AS1	5.5	SM	8	O,S
				T1A4AS3	9	SM	240	O,S
		T2	3/10/89	T2A4AS1	6	SM	26	O,S
				T2A4AS3	10	SM	7	O,S
		T3	3/10/89	T3A4AS1	6	SM	8	
				T3A4AS3	10	SM	NA(6)	
		SB-10	3/24/89	24711	5.5-6.0	SM	NA	
				24712	10.5-11.0	ML	1400	

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 4	A	SB-10	3/24/89	24721	15.5-16.0	CL	<5	
				24722	20.5-21.0	SM	<5	
				24723	25.5-26.0	SP	<5	
				24724	30.5-31.0	SM	<5	
				24725	35.5-36.0	SM	<5	
				24726	40.5-41.0	SM	<5	
				24727	50.5-51.0	SM	<5	
				24728	60.5-61.0	SW	<5	
	B	---	---	---	---	---	---	
	C	T1	3/16/89	T1A4CS1	5	SM	600	O,S
				T1A4CS3	12	CL	900	O,S
AREA 5A	A	---	---	---	---	---	---	
	B	SB-2	1/27/89	23808	2.5-3.0	CL	<5	
				23809	7.0-7.5	CL	<5	
				23810	8.5-9.0	CL	<5	
				23811	12.5-13.0	CL	<5	
				23812	17.0-17.5	CL	<5	
				23813	23.5-24.0	SM-SC	<5	
				23814	29.5-30.0	SP-SM	<5	
	C	T1	3/16/89	T1A5ACS1	5	SM	1200	O,S
				T1A5ACS3	12	SM	250	
	D	T1	3/16/89	T1A5ADS1	7	SM	2800	O
				T1A5ADS3	12.5	SM	60	
	E	T1	3/16/89	T1A5AES1	5.5	SM	20	
				T1A5AES3	13	SM	<5	
	F	---	---	---	---	---	---	
	G	T1	3/14/89	T1A5AGS1	5.5	CL	30	
				T1A5AGS3	7	SM	11000	O,S

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 5A	G	T1	3/14/89	T1A5AGS5	12	SM	660	O,S
		T2	3/15/89	T2A5AGS1	5	SM	230	O
				T2A5AGS3	10	SM	2200	O,S
				T2A5AGS5	12.5	SM	9000	O,S
		T3	3/16/89	T3A5AGS1	5	SM	<5	
				T3A5AGS3	13.5	SM	<5	
	H	SB-1	1/27/89	23824	3.5-4.0	CL	<5	
				23825	6.5-7.0	CL	<5	
				23826	8.0-8.5	CL	<5	
				23827	12.5-13.0	SM	16	
				23828	15.5-16.0	SP-SM	<5	
	I	SB-5	3/22/89	24661	5.5-6.0	SC	<5	
				24662	10.5-11.0	SM	6400	
				24663	15.5-16.0	SM	10	
				24664	20.5-21.0	CL	<5	
				24665	25.5-26.0	CL	<5	
				24666	30.5-31.0	SM	<5	
				24667	35.5-36.0	SW	<5	
				24668	40.5-41.0	CL	<5	
				24669	50.5-51.0	CL	<5	
				24670	60.5-61.0	SM	<5	
	J	---	---	---	---	---	---	
	K	---	---	---	---	---	---	
AREA 5B	A	---	---	---	---	---	---	
	B	T1	3/14/89	T1A5BBS1	5	CL	20	
				T1A5BBS3	13	SM	40	
		T2	3/14/89	T1A5BBS5	5	CL	400	
				T1A5BBS7	14	SM	<5	

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD(5) OBSERVATIONS
AREA 5B	C/D	T1	3/14/89	T1A5BC/DS1	5.5	CL	150	
				T1A5BC/DS3	13	SM	10	
		T2	3/14/89	T2A5BC/DS1	5	CL	<5	
				T2A5BC/DS3	13	SM	300	
	E	T1	3/10/89	T1A5BES1	5	SM	<5	O,S
				T1A5BES3	12	SM	<5	
		T2	3/10/89	T2A5BES1	7.5	SM	120	
				T2A5BES3	12	SM	800	
		T3	3/10/89	T3A5BES1	9	SM	300	O.S
				T3A5BES3	11.5	SM	150	
				T3A5BES5	13	SM	2600	
		SB-7	3/23/89	24681	5.5-6.0	SM	1100	
				24682	10.5-11.0	SM	3500	
				24683	15.5-16.0	SM	1100	
				24684	20.5-21.0	SM	300	
				24685	25.5-26.0	SM	300	
				24686	30.5-31.0	MH	70	
				24687	35.5-36.0	SW	170	
				24688	40.5-41.0	SW	200	
				24689	50.5-51.0	SM	<5	
	F	...	...	...	...	...	...	
	G	---	---	---	---	---	---	
	H	---	---	---	---	---	---	
	I	T1	3/15/89	T1A5BIS1	5.5	SM	7	
				T1A5BIS3	11	SM	5000	O.S
				T1A5BIS5	14	SM	3400	O.S
		SB-6	3/22/89	24671	5.5-6.0	SW	<5	

TABLE 1
Summary of Total Petroleum Hydrocarbon Concentrations-EPA Method 418.1 (continued)

AREA	SUMP ID(1)	TRENCH(T) SOIL BORING(SB)	DATE SAMPLED	SAMPLE ID(2)	DEPTH (FT)	TEXTURE(3)	TPH(4) (ppm)	FIELD OBSERVATIONS
AREA 5B	I	SB-6	3/22/89	24672	10.5-11.0	CL	<5	
				24673	15.5-16.0	SM	<5	
				24674	20.5-21.0	SM	<5	
				24675	25.5-26.0	SM	<5	
				24676	30.5-31.0	SM	<5	
				24677	35.5-36.0	SW	<5	
				24678	40.5-41.0	SM	5	
				24679	50.5-51.0	ML	<5	
				24680	60.5-61.0	SM	<5	
	J	---	---	---	---	---	---	
	K	T1	3/16/89	T1A5BKS1	5		150	
				T1A5BKS3	10		<5	
	L	T1	3/15/89	T1A5BLS1	5.5		140	
				T1A5BLS3	13.5		<5	

(1) Psomas sump identification
(2) For trenches: field sample identification. For soil borings-soil label register numbers.
(3) Unified soil classification
CL=sandy/silty clays;
SM=silty sands;
SP=poorly graded gravelly sands;
SW=well graded gravelly sands;
ML=very fine sands or silts;
SC=clayey sands;
MH=fine sands or silts.
(4) Total petroleum hydrocarbon concerntration-EPA Method 418.1
(5) O=odor; S=stain
(6) NA=not available

TABLE 2: SUMMARY OF PRIORITY POLLUTANT ANALYSES

AREA	Sump	Soil Boring	Sample Depth (ft)	EPA Method 8080 Chlorinated Pesticides/PCB's (ppm)	EPA Method 8240 Volatile Organics (ppm)		EPA Method 8270 Semi-Volatile Organics (ppm)	
AREA 2	B	SB-3	7.5- 8.0	None detected	Benzene	0.5	Naphthalene	310
					Ethyl benzene	6.4		
			20.5-21.0	None detected	None detected		2-Methyl-naphthalene	5.7
	B	SB-8	40.5-41.0	None detected	None detected		None detected	
AREA 3	E	SB-9	15.5-16.0	None detected	None detected		None detected	
AREA 5A	I	SB-5	10.5-11.0	None detected	None detected		2-Methyl-naphthalene	5.7
			50.0-51.0	None detected	None detected		None detected	
AREA 5B	E	SB-7	15.5-16.0	None detected	None detected		2-Methyl-naphthalene	9.7
							Fluorene	0.94
			40.5-41.0	None detected	None detected		2-Methyl-naphthalene	1.6
					Methylene chloride	4.6		
					Freon	0.9		

DISCUSSION OF RESULTS

The results of this investigation and previous investigations are discussed below for each area. The rationale for the volume estimates of soil requiring remediation are also discussed below. The estimated volumes from all sumps are summarized in Table 3 at the end of this section.

AREA 2:

Area 2 comprises approximately 17 acres located northeast of the intersection of Bloomfield Avenue and Emmens Way. Twelve sumps (A through L) were identified from aerial photographs. Ten Sumps (B through K) were investigated by at least one trench and two Sumps (A/B and L) were investigated with soil borings.

Based on a review of the aerial photographs, it appeared that only Sump B was related to aboveground tanks and was probably used to collect tank bottom sludges. Two sumps (I/J) appeared to be a "double sump" and were probably used as oil/water separation sumps. Other sumps from the aerial photographs appeared to be associated with oil wells and were probably used as oil development sumps.

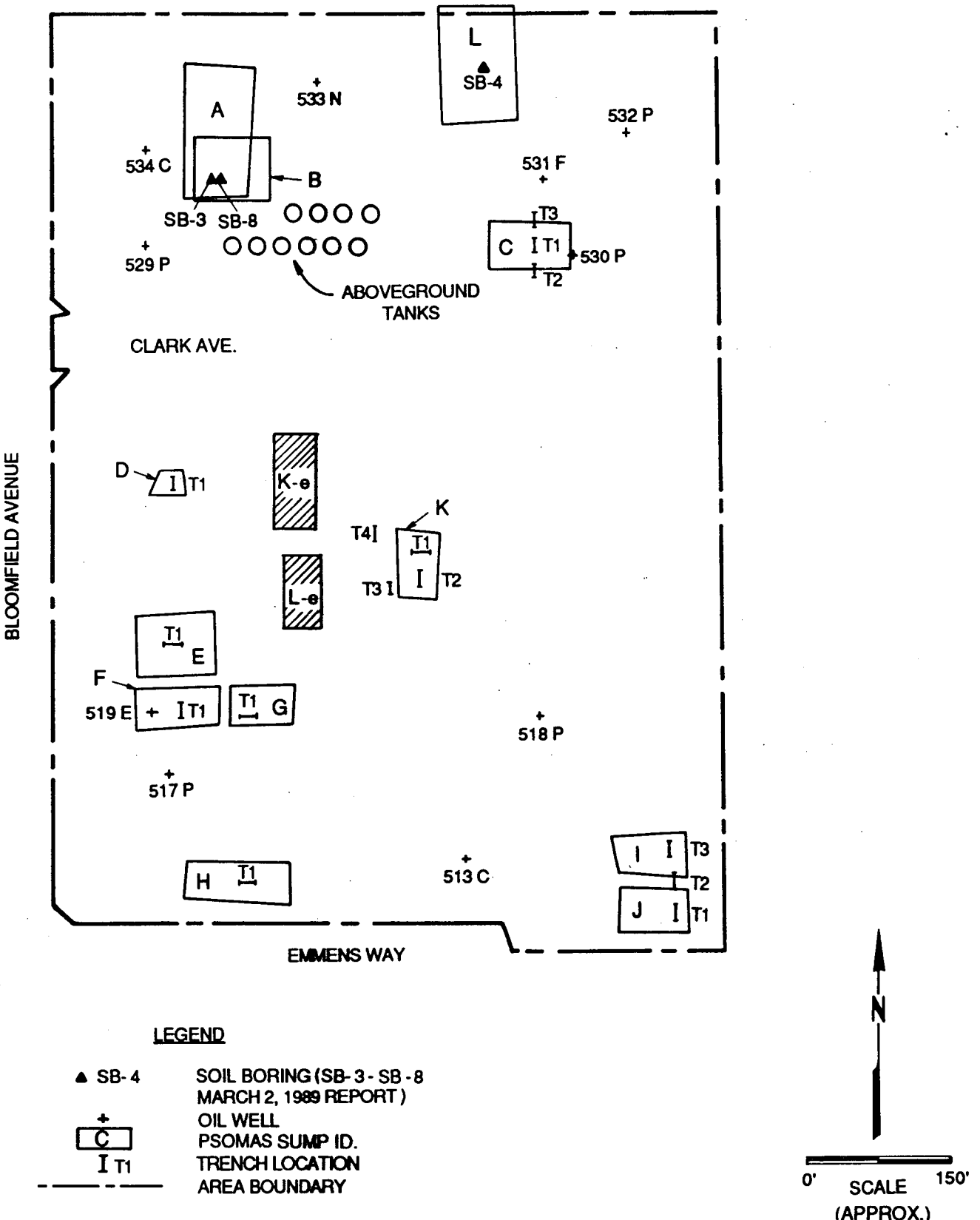
High concentrations of TPH were found in Sump B and a sludge material was observed to a depth of approximately 11 feet below grade. Concentrations of TPH in the sludge were 36,000 ppm and 23,000 ppm in the fine sand immediately beneath the sludge. Concentrations exceeded 1,000 ppm in this material which graded to a coarse sand to a depth of 23 feet. Concentrations of TPH dropped near or below 100 ppm between 23 feet and 61 feet in a coarse sand and gravel layer. Soil colors below 23 feet graded from pale olive to greenish gray, suggesting anaerobic conditions. A cross-section showing the extent of soil containing crude oil in Sump B is presented in Appendix D Figure 1.

Sumps C, D, F, H, J, and K had TPH concentrations between 200 and 1,000 ppm in the upper 5 to 13 feet. With the exception of Sump C, concentrations dropped to below 100 ppm at the 12-foot depth. Ebasco Sumps K and L (K-e and L-e) were reported to contain TPH concentrations of 4,200 ppm and 13,000 ppm at depths of 11 feet.

Volume estimates were made on the basis of these data as shown in Table 3. The areas corresponded to the area of the sump and the depth corresponded to the depth where concentrations dropped below 200 ppm. In Sump C and Ebasco Sumps K and L, the depths at which concentrations would drop to 200 ppm were assumed to be at 20 feet.

The presence of sumps in the area between Sumps D and K is not supported by evidence from aerial photography. One possible explanation for the crude oil in this area is discharge of tank bottom sludge from the tanks which were formerly located immediately north of this area. This area is approximately 1 foot lower than the surrounding area and may have accumulated oil spilled from surrounding sources. A 1963 photograph clearly shows a surface leak accumulating in this area.

FIGURE 2
SOIL INVESTIGATION IN
AREA 2



LEGEND

▲ SB-4	SOIL BORING (SB-3 - SB-8 MARCH 2, 1989 REPORT)
+ C	OIL WELL
I T1	PSOMAS SUMP ID.
	TRENCH LOCATION
	AREA BOUNDARY
K-e	HIGH CONTAMINATED AREAS PER EBASCO NOVEMBER 1988 REPORT

AREA 3:

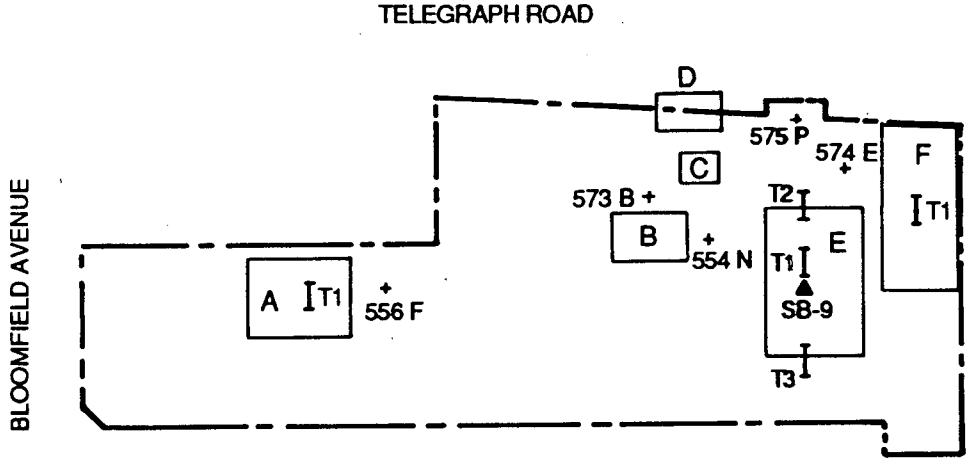
Area 3 comprises approximately 3 acres located southeast of the intersection of Bloomfield Avenue and Telegraph Road. Six sumps (A through F) were identified by Psomas. Sumps A, E and F were investigated by at least one trench and Sump E was also investigated with one soil boring.

Ebasco identified one sump ("Sump N") at the north central part of Area 3. Ebasco's "Sump N" included Sump B. Ebasco's data showed soil with TPH concentrations of 24,531 ppm and 8,255 ppm in samples collected at 6 and 5 feet below ground surface within the perimeter of Sump B. Sumps B, C and D were not investigated at this time because of underground utilities. However, because of Ebasco findings of elevated TPH concentrations in Sump B and because aerial photographs indicated that Sumps B, C, and D, were all well development sumps, it was assumed that surface soils from Sumps C and D are similar to Sump B and will all require remediation.

Sumps A, E, and F were investigated and TPH concentrations above 1,000 ppm were detected in the upper 6 feet near the centers of Sumps E and F. Sump A had concentrations above 200 ppm at 9 feet. Based on the aerial photograph review, Sump A was considered to be a well development sump because it is adjacent to an oil well and because it was observed only on the 1928 photo. Sumps E and F were observed in the 1945 photo and may have been used for a purpose other than mud pits during well construction. However, no tanks are nearby to indicate that they were tank bottom sludge sumps. Cross sections showing the extent of soil containing crude oil in Sumps E and F are presented in Appendix D Figures 2 and 3.

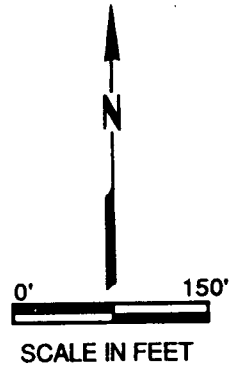
Volume estimates were made on the basis of these data as shown in Table 3. It is assumed that the depth in which TPH concentrations drops to 200 ppm in Sump B, C, and D is 20 feet.

FIGURE 3
SOIL INVESTIGATION IN
AREA 3



LEGEND

SB - 9 ▲	SOIL BORING
+	OIL WELL
A	PSOMAS SUMP ID.
I	TRENCH LOCATION
- - - -	AREAS BOUNDARY



SCALE IN FEET
(APPROX.)

AREA 4:

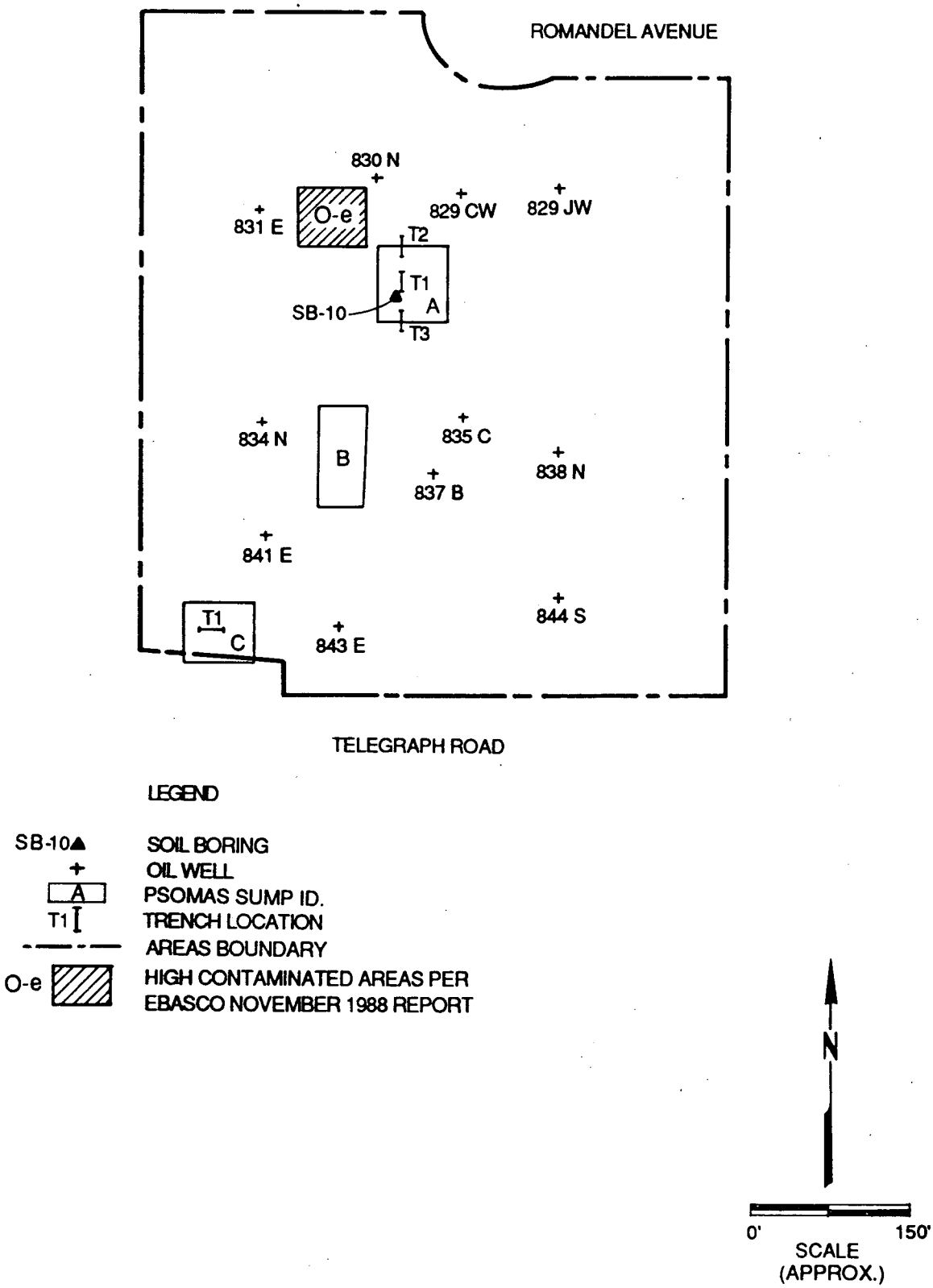
Area 4 comprises approximately 9 acres located north of Telegraph Avenue and east of the railroad tracks. Three sumps (A, B, and C) were identified from aerial photographs. Sumps A and C were investigated with at least one trench and Sump A was also investigated with one soil boring. Sump B was not investigated because underground utilities and a wooden fence prevented trenching at the site.

Sump A is the only sump in Area 4 that was observed on aerial photographs after 1928. No tanks were observed on any aerial photographs adjacent to Sump A which would indicate that this was used as a tank bottom sludge sump. Data from this investigation showed, 1,400 ppm TPH at 11 feet and none detected from 16 feet to 61 feet. A cross-section showing the extent of soil with crude oil in Sump A is presented in Appendix D Figure 4. Ebasco identified "Sump O" with approximately similar dimensions immediately northwest of Sump A. Ebasco's data showed TPH concentrations over 15,000 ppm at 3 feet and field observations of discolored soil and petroleum odors in other trenches in the area. It is likely that "Sump O" and Sump A are the same. However, Ebasco's data cannot be ignored at this time and a separate volume calculation was made for "Sump O".

Sumps B and C were observed only on the 1928 photo and were adjacent to oil wells and are therefore assumed to be well development sumps. Since Sump B could not be investigated, it was assumed that the TPH concentrations are similar to Sump C. Sump C had a TPH concentration of 900 ppm at 12 feet. The maximum depth of soil requiring remediation is assumed to be 15 feet in both sumps.

Volume estimates were based on the above assumption and the data is shown in Table 3.

FIGURE 4
SOIL INVESTIGATION IN
AREA 4



AREA 5A:

Area 5A compromises approximately 25 acres located north of Florence Avenue, east of Shoemaker and south of the rail spur. Eleven sumps (A through K) were identified from aerial photographs by Psomas. Sumps C, D, E, and G, were investigated with at least one trench. Sumps B, H, and I were each investigated with one soil boring. Sumps J and K were not investigated because buildings were present.

Based on review of aerial photographs, it appeared that Sump I and probably Sump J, were used to collect tank bottom sludges. Total petroleum concentrations of 6,400 ppm were encountered in Sump I in a sandy layer at a depth of 11 feet and dropped down to "not detected" (<5ppm) at a depth below 20 feet. A cross-section showing the extent of soil containing crude oil in Sump I is presented in Appendix D Figure 5. It is assumed that soil which may require remediation in Sumps I and J extents to a depth of 15 feet.

The 9,000 ppm concentration of TPH encountered at a depth of 12.5 feet in Sump G is related to an active leak in an underground oil pipe. The depth of soil with TPH concentrations greater than 200 ppm in Sump G is estimated at 20 feet.

Soil investigations in Sump C showed TPH concentrations of 1,200 ppm and 200 ppm at depths of 5 and 12 feet, respectively. It is assumed that the depth of which requires remediation in Sump C is 15 feet.

Sumps D and F were adjacent to the drainage ditch and may have been used as oil/water separation sumps. Soil investigations in Sump D showed TPH concentrations of 2,800 ppm and 60 ppm at depths of 7 and 12.5 feet respectively. Depth of soil containing crude oil with TPH concentrations greater than 200 ppm is assumed 10 feet in Sumps D and F.

Sump B showed on aerial photographs up to 1953. The sump appeared to be a double sump which may have been used as an oil/water separation sump. Although soil analysis from the one auger hole drilled near the center of the southern part of Sump B did not show any TPH concentrations greater than 200 ppm there may be some soil in Sump B that may require remediation. It is assumed that the depth to which soil in Sump B may requie remediation is 10 feet.

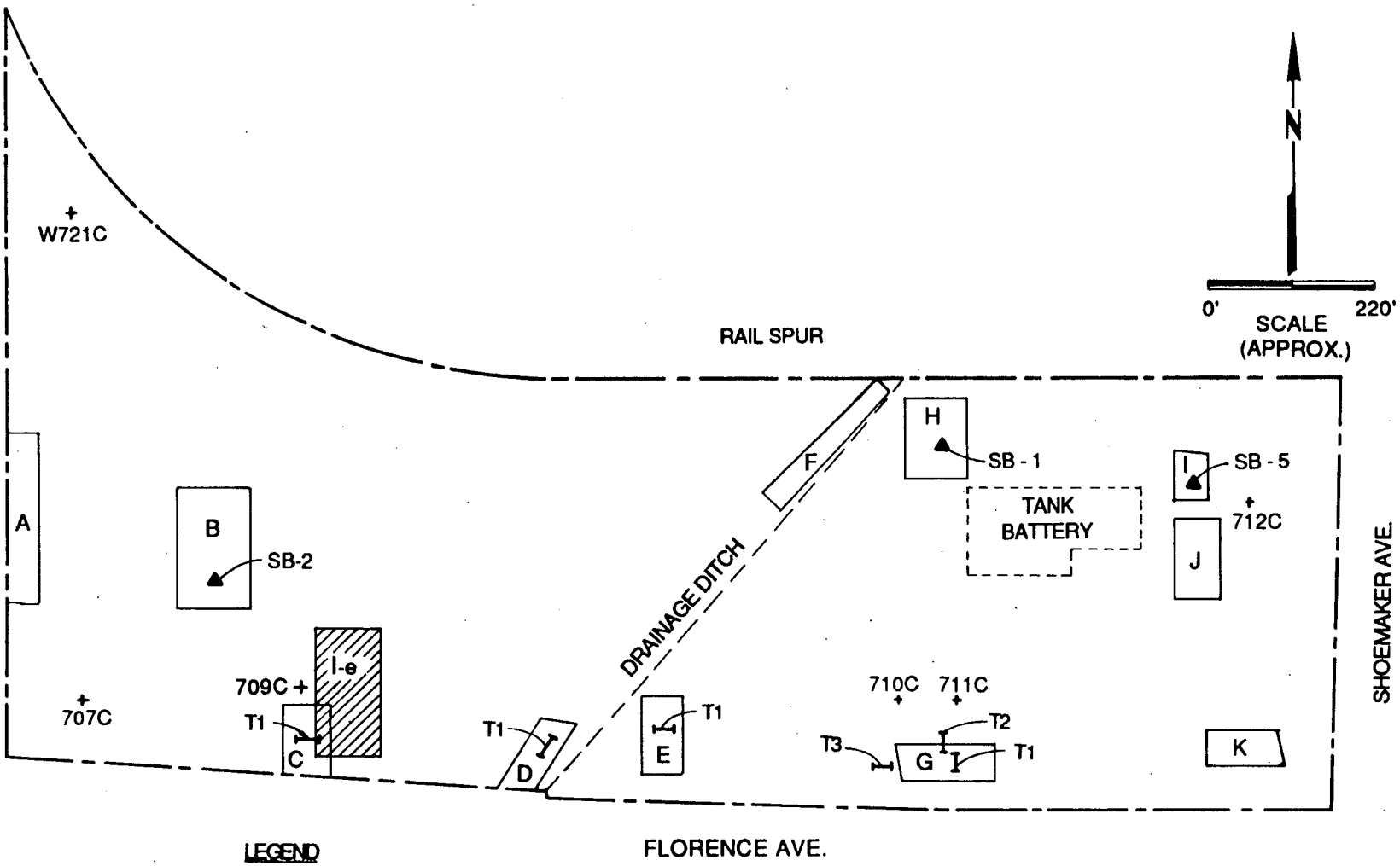
No soil investigations were conducted at Sump A. The 1928 aerial photograph shows that Sump A may have been associated with oil production activities from two oil wells to the north and three oil wells to the south of the sump. Thus, it is assumed that soils which may have TPH concentrations greater than 200 ppm in Sump A may extent to a depth of 10 feet.

No investigations were conducted at Sump K shows on aerial photographs up to 1947. Because no tanks were observed near Sump K and because sump was adjacent to an oil well, it is assumed that soils to a depth of 5 feet in Sump K may require remediation.

Ebasco identified one sump "Sump I", at the south west side of Area 5A, to have soil with TPH concentrations of 1,900 ppm at 12 feet. It is likely that "Sump I" and Sump C are the same. However, Ebasco's data cannot be ignored and volume calculations were made for "Sump I". The maximum depth of soil that require remediation is assumed at 20 feet in "Sump I".

Volume estimates were made on the of the above assumptions and the data as shown in Table 3.

FIGURE 5
SOIL INVESTIGATION IN
AREA 5A



LEGEND

SB - 5 ▲ SOIL BORING (SB-1, SB - 2 MARCH 2, 1989 REPORT)

\+ OIL WELL

B PSOMAS SUMP ID.

T1 TRENCH LOCATION

AREAS BOUNDARY

I-e HIGH CONTAMINATED AREAS PER EBASCO NOVEMBER 1988 REPORT

AREA 5B:

Area 5B comprises approximately 28 acres located west of Shoemaker and north of the Rail Spur. Thirteen sumps (A through M) were identified from aerial photographs by Psomas Sumps B, C, D, E, I, K and L were investigated by at least one trench and Sumps E and I were each investigated with one soil boring.

Concentration of 3,500 ppm were detected at a depth of 11 feet in Sump E. Concentrations of TPH in Sump E decreased with depth to 70 ppm at 31 feet. A cross-section showing the extent of soil containing crude oil in Sump E is presented in Appendix D, Figure 6. The aerial photo review showed that Sumps E, F and G are associated with the gas plant, but only Sumps E and F showed on aerials beyond 1945. It is assumed that the depth of soil requiring remediation is 30 feet in Sumps E and F and 15 feet in Sump G.

Analysis of soil samples from a trench dug near the center of Sump I showed TPH concentrations of 3,400 ppm at 14 feet. The aerial photo review also showed that Sumps I and J appeared to be a double sump which may have been used as an oil/water separation sump. The depth of soil requiring remediation in Sumps I and J is estimated at 15 feet. A cross-section showing the extent of soil with crude oil in Sump I is presented in Appendix D Figure 7.

Sumps C and D appeared in aerial photographs to be a double sump. Analysis of soil samples showed TPH concentrations greater than 300 ppm at 13 feet in Sump D, and 150 ppm at 5.5 feet in Sump C. It is estimated that the depths of soil requiring remediation in Sumps C and D are 5 and 15 feet, respectively.

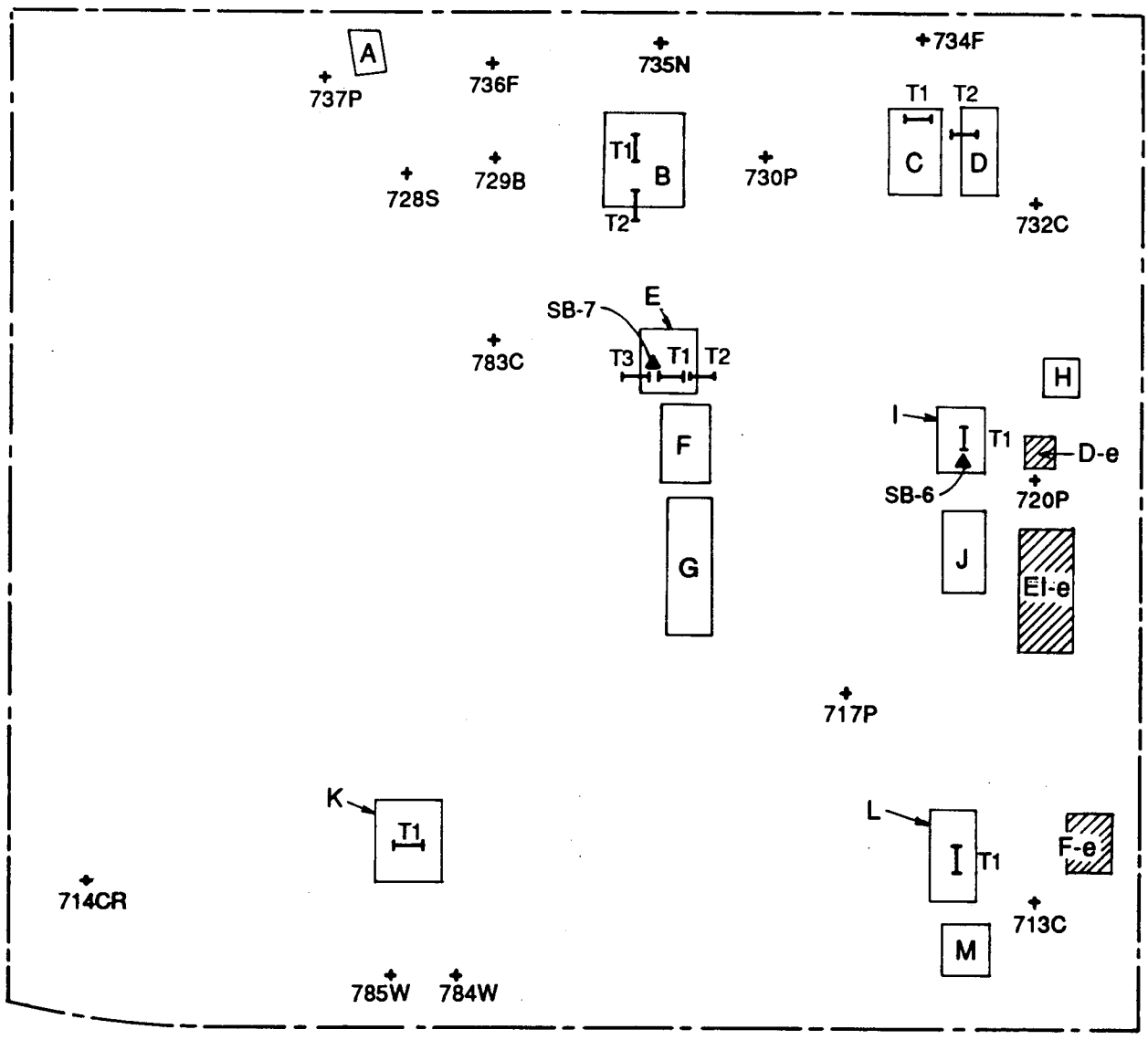
Sumps L and M in Area 5B also appear to be a double sump which may have been used as an oil/water separation sump. Since field investigations showed that TPH concentrations in Sump L were less than 200 ppm, it is assumed that the same is applicable to Sump M.

Sump A was not investigated because underground utilities prevented trenching in that area. However, the 1928 aerial photographs showed that Sump A is located next to an oil well and was probably an oil well development sump. It is estimated that the depth of soil that may require remediation in Sump A is 5 feet.

Ebasco defined three sumps, "Sump D", "Sump E1", and "Sump F" southeast of Area 5B near Shoemaker with TPH concentrations greater than 200 ppm. Ebasco's "Sump F" had a concentration of 3,000 ppm at a depth of 10 feet and "Sumps D" and "E1" had TPH concentrations of 530 and 210 ppm at depths of 10 and 11 feet, respectively. The presence of these sumps is not supported by evidence from aerial photographs. However, these areas may have received petroleum discharge from oil operation activities in the area. Total depth of soil with TPH concentrations greater than 200 ppm in Ebasco Sumps "D", "E1" and "F" is estimated at 15, 15 and 20 feet respectively.

Volume estimates were made on the basis of the above assumptions and the data is shown in Table 3.

FIGURE 6
SOIL INVESTIGATION IN
AREA 5B



LEGEND

SB- ▲ SOIL BORING

\+ OIL WELL

PSOMAS SUMP ID.

T1 TRENCH LOCATION

AREAS BOUNDARY

HIGH CONTAMINATED AREAS PER
EBASCO NOVEMBER 1988 REPORT

N

0' 180'

SCALE
(APPROX.)

TABLE 3: ESTIMATED VOLUMES OF CRUDE OIL
AFFECTED SOILS IN EACH SUMP (FLUFF FACTOR 1.2)

AREA	SUMP[1] ID	EBASCO(2) AREA ID	SUMP DIMENSIONS (feet)	Volume of Soils Requiring Remediation (TPH >200 ppm)(3) Depth (feet)	Excavated[4] Volume (cubic yards)
AREA 2	A/B		140 x 90	25	14,000
	C		90 x 50	20	4,000
	D		30 x 30	10	400
	E		90 x 65	--	---
	F		90 x 45	5	900
	G		70 x 42	--	---
	H		125 x 38	5	1,050
	I		80 x 50	--	---
	J		70 x 50	10	1,550
	K		75 x 45	15	1,550
	L		125 x 80	--	---
		K	105 x 54	20	5,000
		L	105 x 45	20	4,200
				Subtotal Area 2	**31,100**
AREA 3	A		90 x 60	15	3,600
	B		60 x 35	20	1,900
	C		35 x 25	20	770
	D		50 x 30	20	1,330
	E		120 x 80	15	6,400
	F		135 x 80	10	4,800
				Subtotal Area 3	**18,800**
AREA 4	A		70 x 75	15	3,500
	B		100 x 50	15	3,330
	C		75 x 75	15	3,750
		O	90 x 81	20	6,500
				Subtotal Area 4	**17,080**

(1) Psomas Sump ID
(2) Ebasco November, 1988 report.
(3) Total Petroleum Hydrocarbon Concentration - EPA Method 418.1
(4) Excavated volume accounts for a fluff factor of 1.2

TABLE 3: ESTIMATED VOLUMES OF CRUDE OIL
AFFECTED SOILS IN EACH SUMP (FLUFF FACTOR 1.2)
(Continued)

AREA	SUMP[1] ID	EBASCO(2) AREA ID	SUMP DIMENSIONS (feet)	Volume of Soils Requiring Remediation (TPH >200 ppm)(3) Depth (feet)	Excavated[4] Volume (cubic yards)
AREA 5A	A		220 x 40	10	3,910
	B		150 x 95	10	6,330
	C		50 x 45	15	1,125
	D		110 x 50	10	2,440
	E		100 x 60	--	---
	F		210 x 30	10	2,800
	G		130 x 50	20	5,770
	H		105 x 85	--	---
	I		70 x 40	15	1,870
	J		105 x 60	15	4,200
	K		100 x 45	5	1,000
		I	140 x 65	20	8,100
				Subtotal Area 5A	**37,545**
AREA 5B	A		35 x 25	5	200
	B		100 x 90	5	2,000
	C		100 x 60	5	1,200
	D		90 x 50	15	3,000
	E		70 x 60	30	5,620
	F		100 x 45	30	6,000
	G		150 x 50	15	5,000
	H		40 x 40	--	---
	I		75 x 40	15	2,000
	J		90 x 40	15	2,400
	K		90 x 80	--	---
	L		90 x 50	--	---
	M		55 x 50	--	---
		D	60 x 48	15	1,920
		E1	150 x 90	15	9,000
		F	60 x 50	20	2,700
				Subtotal Area 5B	**41,040**
				TOTAL	**145,525**

(1) Psomas Sump ID
(2) Ebasco November 1988 report
(3) Total Petroleum Hydrocarbon Concentration - EPA Method 418.1
(4) Excavated volume accounts for a fluff factor of 1.2

PRIORITY POLLUTANT ANALYSIS

Two soil samples from each Soil Borings SB-3/SB-8 (Area 2, Sump B), SB-9 (Area 3, Sump E), SB-5 (Area 5A, Sump I) and SB-7 (Area 5B, Sump E) were analyzed for priority pollutant compounds using EPA Methods 8080, 8280 and 8270. Samples from each soil boring were collected from intervals that showed most visible discoloration (10-15 feet), and from depths that ranged between 40 and 50 feet below ground surface (BGS). Volatile and semi-volatile organics were detected at a depth of 7.5 to 8.0 feet BGS in Soil Boring SB-3. The detected chemicals in the sample are typical of crude oil and its breakdown products including xylene, napthalene, 2-methylnaphthalene, fluorene and phenathrene. Fluorene and 2-methylnaphthalene were detected in soil samples collected at 15.5 feet BGS from Soil Boring SB-7 (Area 5B, Sump E). Only 2-methylnaphthalene was detected at a depth of 41 feet in Soil Boring SB-7. No other chemicals were detected in any of the soil samples analyzed for priority pollutant organics.

Priority pollutant metals in soil samples collected at a depth of 8 feet BGS from Soil Boring SB-3 were below the total threshold limit concentrations (TTLC) values as described in Title 22. Except for barium, copper and lead, all priority pollutant metals had concentrations below the soluble threshold limit concentrations (STLC) values. A waste extraction test (WET) conducted on barium, copper, and lead showed that the three metals were below the STLL values.

These data from the priority pollutant analyses indicate that priority pollutants are not present on the property at significant levels and that petroleum hydrocarbons are the only chemicals of concern this, at site.

MICROBIAL SCREENING

Laboratory screening was performed on soil samples from four soil borings to enumerate viable microbial populations at various depths in what appeared to be Tank Bottom Sludge Sumps. These populations were compared with microbial populations in soil from a control location to assess the effect of past oilfield practices on soil microorganisms. Differences in populations between control and sump locations were attributed to the oil field practices because the soil and climatic variables were similar for all locations.

The results of the laboratory screening (Table 5) indicated considerable differences in microbial populations with depth at Soil Borings SB-5, SB-7, SB-8, SB-9 compared to Control Boring SB-11. The influence hydrocarbon on microbiological populations with depth is shown on Figure 7.

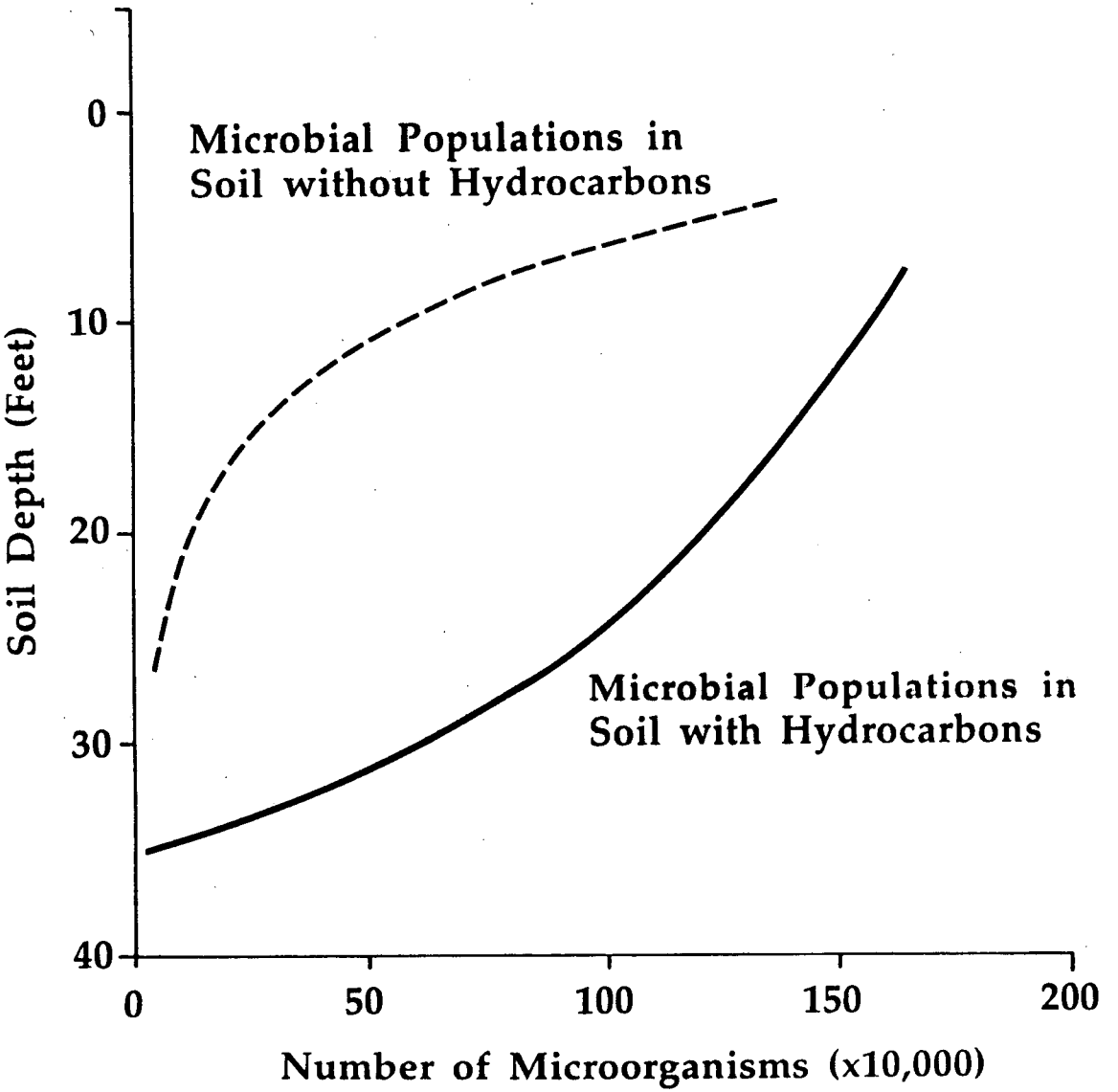
TABLE 4: MICROBIAL POPULATION IN SOIL FROM 10 TO 40 FEET

Depth (feet)	Locations				
	SB-5 Area 5A Sump I	SB-7 Area 5B Sump E	SB-8 Area 2 Sump E	SB-9 Area 3	SB-11 Control
10	2.9[a]	4.4	5.0	4.2	5.4	2.7
20	4.2	3.7	6.2	5.4	5.0	2.0
30	2.3	6.3	3.4	3.3	4.9	2.9
40	4.5	5.3	3.6	3.2	3.7	3.1

a - Mean of four replications, log numbers of viable microorganisms per gram of soil (e. $2.9 = 10^{2.9}$ or 794 colony forming units)

FIGURE 7

SOIL MICROBIAL POPULATIONS AS INFLUENCED BY DEPTH AND HYDROCARBONS



SUMMARY AND CONCLUSIONS

Available data and our best judgment were used to estimate the volume of soil containing crude oil in the sumps at the proposed McGranahan, Carlson and Company Commerce Center II in the city of Santa Fe Springs, California. Based on the available data we have estimated that the volume of soil which will require remediation is approximately 121,000 cubic yards (in place), or 146,000 cubic yards (excavated). This estimate does not include soil which may require remediation as a result of underground pipeline leaks or random discharge of crude oil not associated with visible surface features. We have included a contingency of 25 percent to account for this additional soil bringing the total estimated volume of soil requiring remediation to 152,000 cubic yards (in place) or 182,000 cubic yards (excavated). A summary of estimated volumes in each area is presented in Table 3.

TABLE 5: SUMMARY OF ESTIMATED VOLUMES (IN CUBIC YARDS) OF SOIL THAT REQUIRE REMEDIATION AT THE McGRANAHAN, CARLSON COMMERCE CENTER II.

	Estimated Volumes (cubic yards)		Estimated Volumes with 25% contingency (cubic yards)	
AREA	In place	Excavated(1)	In place	Excavated(1)
AREA 2	25,920	31,100	32,400	38,875
AREA 3	15,670	18,800	19,590	23,500
AREA 4	14,230	17,080	17,800	21,350
AREA 5A	31,290	37,545	39,110	46,930
AREA 5B	34,200	41,040	42,750	51,300
TOTALS	121,310	145,565	151,650	181,955

(1) Excavated volume accounts for a fluff factor of 1.2.

APPENDIX A

LABORATORY DATA SHEETS AND CHAIN-OF-CUSTODY FORMS
TRENCHING

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22540

Sample Location: A2C T1S1

Date Collected: 03/13/89

Sample Number: 12974

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	270.	30.

Comments: 1:6 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22541

Sample Location: A2C T1S3

Date Collected: 03/13/89

Sample Number: 12976

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	480.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22542

Sample Location: A2C T2S1

Date Collected: 03/13/89

Sample Number: 12978

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	280.	20.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22543

Sample Location: A2C T2S3

Date Collected: 03/13/89

Sample Number: 12980

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Rameznanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22544

Sample Location: A2C T3S1

Date Collected: 03/13/89

Sample Number: 12982

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	130.	30.

Comments: 1:6 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22545

Sample Location: A2C T3S2

Date Collected: 03/13/89

Sample Number: 12984

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	610.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22744

Sample Location: 2D T1S1

Date Collected: 03/16/89

Sample Number: 10777

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	1000.	150.

Comments: 1:30 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22735

Sample Location: 2D T1S3

Date Collected: 03/16/89

Sample Number: 10779

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22649

Sample Location: 2E T1S1

Date Collected: 03/15/89

Sample Number: 12932

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	180.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell for

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22650

Sample Location: 2E T1S3

Date Collected: 03/15/89

Sample Number: 12934

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Rameizanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell for

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22736

Sample Location: 2F T1S1

Date Collected: 03/16/89

Sample Number: 10781

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	800.	130.

Comments: 1:25 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22737

Sample Location: 2F T1S3

Date Collected: 03/16/89

Sample Number: 10783

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	50.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22647

Sample Location: 2G T1S1

Date Collected: 03/15/89

Sample Number: 12928

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	130.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: for J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22648

Sample Location: 2G T1S3

Date Collected: 03/15/89

Sample Number: 12930

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Rameazanzadeh Reviewed By: J. M. Hoch Date: 04/03/89

Laboratory Director: J. M. Bartell for

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22651

Sample Location: 2H T1S1

Date Collected: 03/15/89

Sample Number: 12936

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	520.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22652

Sample Location: 2H T1S3

Date Collected: 03/15/89

Sample Number: 12938

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/03/89

Laboratory Director: J. M. Bartell for:

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22534

Sample Location: A2I/J T1S1

Date Collected: 03/13/89

Sample Number: 12962

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	200.	30.

Comments: 1:6 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22535

Sample Location: A2I/J T1S3

Date Collected: 03/13/89

Sample Number: 12964

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	90.	10.

Comments: 1:3 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22536

Sample Location: A2I/J T2S1

Date Collected: 03/13/89

Sample Number: 12966

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22537

Sample Location: A2I/J T2S3

Date Collected: 03/13/89

Sample Number: 12968

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22538

Sample Location: A2I/J T3S1

Date Collected: 03/13/89

Sample Number: 12970

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22539

Sample Location: A2I/J T3S3

Date Collected: 03/13/89

Sample Number: 12972

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22529

Sample Location: A2K T1S1

Date Collected: 03/13/89

Sample Number: 24850

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	120.	20.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/30/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22530

Sample Location: A2K T1S3

Date Collected: 03/13/89

Sample Number: 12952

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	20.	5.

Comments:

Analyst: F. Rameezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22531

Sample Location: A2K T2S1

Date Collected: 03/13/89

Sample Number: 12954

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	120.	20.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22532

Sample Location: A2K T2S5

Date Collected: 03/13/89

Sample Number: 12958

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22533

Sample Location: A2K T2S7

Date Collected: 03/13/89

Sample Number: 12960

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	790.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22579

Sample Location: 2-K T3S1

Date Collected: 03/14/89

Sample Number: 12914

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22533

Sample Location: A2K T2S7

Date Collected: 03/13/89

Sample Number: 12960

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	790.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22579

Sample Location: 2-K T3S1

Date Collected: 03/14/89

Sample Number: 12914

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22580

Sample Location: 2-K T3S3

Date Collected: 03/14/89

Sample Number: 12916

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22582

Sample Location: 2-K T4S3

Date Collected: 03/14/89

Sample Number: 12920

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22546

Sample Location: A3A T1S1

Date Collected: 03/13/89

Sample Number: 12986

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	210.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22547

Sample Location: A3A T1S3

Date Collected: 03/13/89

Sample Number: 12988

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	340.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22548

Sample Location: A3A T1S5

Date Collected: 03/13/89

Sample Number: 12990

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/13/89

Laboratory Director: J. M. Bartels

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22329

Sample Location: A3E T1S1

Date Collected: 03/10/89

Sample Number: 24836

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	4000.	500.

Comments: 1:100 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22330

Sample Location: A3E T1S3

Date Collected: 03/10/89

Sample Number: 24838

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22331

Sample Location: A3E T1S5

Date Collected: 03/10/89

Sample Number: 24840

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Rameczanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22525

Sample Location: A3E T2S1

Date Collected: 03/13/89

Sample Number: 24842

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22526

Sample Location: A3E T2S3

Date Collected: 03/13/89

Sample Number: 24844

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	900.	120.

Comments: 1:25 dilution used in analysis.

Analyst: F. Ranezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22527

Sample Location: A3E T3S1

Date Collected: 03/13/89

Sample Number: 24846

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	2600.	200.

Comments: 1:50 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22528

Sample Location: A3E T3S3

Date Collected: 03/13/89

Sample Number: 24848

Date Analyzed: 04/12/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/13/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22742

Sample Location: 3F T1S1

Date Collected: 03/16/89

Sample Number: 10773

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	2700.	400.

Comments: 1:80 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22743

Sample Location: 3F T1S3

Date Collected: 03/16/89

Sample Number: 10775

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22323

Sample Location: A4A T1S1

Date Collected: 03/10/89

Sample Number: 24824

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	8.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22324

Sample Location: A4A T1S3

Date Collected: 03/10/89

Sample Number: 24826

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	240.	25.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22325

Sample Location: A4A T2S1

Date Collected: 03/10/89

Sample Number: 24828

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	26.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22326

Sample Location: A4A T2S3

Date Collected: 03/10/89

Sample Number: 24830

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	7.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22327

Sample Location: A4A T3S1

Sample Number: 24832

Date Collected: 03/10/89

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	8.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22740

Sample Location: 4C T1S1

Date Collected: 03/16/89

Sample Number: 10769

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	600.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22741

Sample Location: 4C T1S3

Date Collected: 03/16/89

Sample Number: 10771

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	900.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22741

Sample Location: 4C T1S3

Date Collected: 03/16/89

Sample Number: 10771

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	900.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22576

Sample Location: 5A-G T1S1

Date Collected: 03/14/89

Sample Number: 12908

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	30.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22577

Sample Location: 5A-G T1S3

Date Collected: 03/14/89

Sample Number: 12910

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	11000.	1000.

Comments: 1:200 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22578

Sample Location: 5A-G T1S5

Date Collected: 03/14/89

Sample Number: 12912

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	660.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22658

Sample Location: 5AG T2S1 3B

Date Collected: 03/15/89

Sample Number: 12922

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	230.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell for

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22645

Sample Location: 5AG T2S3 90

Date Collected: 03/15/89

Sample Number: 12924

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	2200.	250.

Comments: 1:50 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: for J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22646

Sample Location: 5AG T2S5 gp

Date Collected: 03/15/89

Sample Number: 12926

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	9000.	1000.

Comments: 1:200 dilution used in analysis.

Analyst: F. Ranezanzadeh Reviewed By: J. M. Hoch Date: 04/03/89

Laboratory Director: for J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22738

Sample Location: 5AG T3S1

Date Collected: 03/16/89

Sample Number: 10785

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22739

Sample Location: 5AG T3S3

Date Collected: 03/16/89

Sample Number: 10787

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22568

Sample Location: 5B-B T1S1

Date Collected: 03/14/89

Sample Number: 12992

Date Analyzed: 03/29/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	20.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22569

Sample Location: 5B-B T1S3

Date Collected: 03/14/89

Sample Number: 12994

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	40.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22570

Sample Location: 5B-B T2S1

Date Collected: 03/14/89

Sample Number: 12996

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	400.	130.

Comments: 1:25 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22571

Sample Location: 5B-B T2S3

Date Collected: 03/14/89

Sample Number: 12998

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22572

Sample Location: 5B-C/D T1S1

Date Collected: 03/14/89

Sample Number: 13000

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	150.	25.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22573

Sample Location: 5B-C/D T1S3

Date Collected: 03/14/89

Sample Number: 12902

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22574

Sample Location: 5B-C/D T2S1

Date Collected: 03/14/89

Sample Number: 12904

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ranezanzadeh Reviewed By: J. M. Hoch Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22575

Sample Location: 5B-C/D T2S3

Date Collected: 03/14/89

Sample Number: 12906

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	300.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/11/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22316

Sample Location: A5B-E T1S1

Date Collected: 03/10/89

Sample Number: 24810

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch for Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22653

Sample Location: 5BL T1S1

Date Collected: 03/15/89

Sample Number: 12940

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	140.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell for

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22654

Sample Location: 5BL T1S5

Date Collected: 03/15/89

Sample Number: 12942

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/03/89

Laboratory Director: J. M. Bartell for.

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22656

Sample Location: 5BI T1S3

Date Collected: 03/15/89

Sample Number: 12946

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	5000.	500.

Comments: 1:100 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22657

Sample Location: 5BI T1S5

Date Collected: 03/15/89

Sample Number: 12948

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	3400.	500.

Comments: 1:100 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/03/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22746

Sample Location: 5BK T1S1

Date Collected: 03/16/89

Sample Number: 24301

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	150.	25.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22747

Sample Location: 5BK T1S3

Date Collected: 03/16/89

Sample Number: 24303

Date Analyzed: 04/11/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22317

Sample Location: A5B-E T1S3

Date Collected: 03/10/89

Sample Number: 24812

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch for: Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22318

Sample Location: A5B-E
T2S1

Date Collected: 03/10/89

Sample Number: 24814

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	120.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch - for

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22319

Sample Location: A5B-E T2S3

Date Collected: 03/10/89

Sample Number: 24816

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	800.	100.

Comments: 1:20 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22320

Sample Location: A5B-E
T3S1

Date Collected: 03/10/89

Sample Number: 24818

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	300.	25.

Comments: 1:5 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22321

Sample Location: A5B-E
T3S3

Date Collected: 03/10/89

Sample Number: 24820

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	150.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22322

Sample Location: A5B-E
T3S5

Date Collected: 03/10/89

Sample Number: 24822

Date Analyzed: 03/28/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	2600.	400.

Comments: 1:80 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 03/29/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 22655

Sample Location: 5BI T1S1

Date Collected: 03/15/89

Sample Number: 12944

Date Analyzed: 03/31/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	7.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/03/89

Laboratory Director: for J. M. Bartell

McLaren

McLaren Analytical Laboratory
Chain of Custody Record

212676

L.P. 1537

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
5AE	T1S1	3.16.89				X	10789	6" tubes	418.1 (22730)
	T1S2						10790		~~Analysis~~ Archive
	T1S3						10791		418.1 (2273)
	T1S4						10792		Archive
5AD	T1S1						10793		418.1 (22732)
	T1S2						10794		Archive
	T1S3						10795		418.1 (22733)
	T1S4						10796		Archive
5AC	T1S1						10797		418.1 (2273)
	T1S3						10798		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3.16.89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*	MICHAEL N. NEUENBURG	DATE/TIME
Michael N. Neuenburg		3/17/89 10:30

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION: SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

Analysis to Emanuel L. Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212675

L.P. 1537

Lan Beck

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
2D	T1S3	3.16.89				X	10779	6" tubes	418.1 (22735)
↓	T1S4						10780		Archive
2F	T1S1						10781		418.1 (22736)
	T1S2						10782		Archive
	T1S3						10783		418.1 (2273
↓	T1S4						10784		Archive
5AG	T3S1						10785		418.1 (2273
	T3S2						10786		Archive
	T3S3						10787		418.1 (2273
↓	T3S4	↓				↓	10788	↓	Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel Lan Beck		3.16.89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Neuenburg	MICHAEL A. NEUENBURG	3/17/89 10:30

METHOD OF SHIPMENT:
FED EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐

SAMPLES RECEIVED IN STORAGE ☐ CONDITION

Analysis to Emanuel F. Santa Ana

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212674

L.F. 1537

PROJECT DESIGNATION McGranahan U.S. SAMPLES TAKEN BY:* Laurie Benkel Jan Beal

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
4C	T1S1	3-16-89				X	10769	6" tubes	418.1 (2274)
	T1S2						10770		Archive
	T1S3						10771		418.1 (2274)
	T1S4						10772		Archive
3F	T1S1						10773		418.1 (2274)
	T1S2						10774		Archive
	T1S3						10775		418.1 (2274)
	T1S4						10776		Archive
2D	T1S1						10777		418.1 (2274)
2D	T1S2						10778		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel Jan Beal		3-16-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*	MICHAEL H. NEUENBURG	DATE/TIME
Michael H. Neuenburg		3/17/89 10:30

METHOD OF SHIPMENT: FED EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ SAMPLES RECEIVED IN STORAGE ☐ GOOD CONDITION

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

Analysis to Emanuel F. Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212677

L.P. 1537

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
5AC	T1S3	3-16-89				X	10799	6" tubes	418.1 (22745)
	T1S4						10800		Archive
5BK	T1S1						24301 ~~10801~~		418.1 (22746)
	T1S2						24302 ~~10802~~		Archive
	T1S3						24303 ~~10803~~		418.1 (22747)
	T1S4						24304 ~~10804~~		Archive

Sample numbers confirmed by L.B on 3/17/89

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:* Laurie Benkel	RECEIVED BY:*	DATE/TIME 3-16-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:* Michael A. Neuenburg MICHAEL N. NEUENBURG		DATE/TIME 3/17/89 10:30 MN.

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION:

SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Analysis to Emanuel Santa Ana FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212672

L.P. 1526

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel Lori Bull

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
2E	T1S1	3-15-89				X	12932	6" tubes	418.1 (=264)
	T1S2						12933		Archive
	T1S3						12934		418.1 (=265)
	T1S4						12935		Archive
2H	T1S1						12936		418.1 (=264)
	T1S2						12937		Archive
	T1S3						12938		418.1 (=265)
	T1S4						12939		Archive
5BL	T1S1						12940		418.1 (=265)
	T1S2						12941		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel Lori Bull		3-15-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Neuenburg MICHAEL N. NEUENBURG		3/16/89 10:15

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION: SAMPLES RECEIVED

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Return analysis to Emanuel F FREEZER ☐ ID _____ ☐ ☐

Santa Ana CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212673

L.P. 1526

PROJECT DESIGNATION Mc Granahan 4,0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
5BL	T1S3	3-15-89				X	12942	6" tubes	418.1 (2265)
↓	T1S4						12943		Archive
5BI	T1S1						12944		418.1 (2265)
	T1S2						12945		Archive
	T1S3						12946		418.1 (2265)
	T1S4						12947		Archive
	T1S5						12948		418.1 (2265)
↓	T1S6	↓				↓	12949	↓	Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3-15-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Neuenburg MICHAEL N. NEUENBURG		3/16/89 10:15

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION: SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

Return analysis to Emanuel F. Santa Ana.

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212659

L.P. 1500

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Berkell

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A5B-E	T1S1	3/10			X	X	24810	6" tubes	418.1 (2231G)
	T1S2						24811		Archive
	T1S3						24812		418.1 (2231K)
	T1S4						24813		Archive
	T2S1						24814		418.1 (2231J)
	T2S2						24815		ARCHIVE
	T2S3						24816		418.1 (2231I)
	T2S4						24817		ARCHIVE
	T3S1						24818		418.1 (2232)
	T3S2						24819		ARCHIVE

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Berkell		03-10-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Neuenburg	MICHAEL N. NEUENBURG	3/11/89 8:30

METHOD OF SHIPMENT:

Fed Ex.

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐

SAMPLES RECEIVED IN GOOD CONDITION

Emanuel Fairbairn

Analysis to ~~Dennis Depeen~~ Santa Ana

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212671

L. P. 1500

PROJECT DESIGNATION Mc Granahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
58-E	T3S3	3/10			X	X	24820	6" TUBE	418.1
	T3S4						24821		ARCHIVE
	T3S5						24822		418.1
	T3S6						24823		ARCHIVE
AA	T1S1						24824		418.1
	T1S2						24825		ARCHIVE
	T1S3						24826		418.1
	T1S4						24827		ARCHIVE
	T2S1						24828		418.1
	T2S2						24829		ARCHIVE

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		03-10-89 5 PM
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Heuenburg	MICHAEL N. HEUENBURG	3/11/89 9:30

METHOD OF SHIPMENT: FED EX

SAMPLES RECEIVED

LABORATORY DISPOSITION: IN GOOD CONDITION

IMMEDIATE ANALYSIS ☒ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

Return Analysis to Emanuel Falkoury Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212670

L. P. 1500

PROJECT DESIGNATION Mc Granahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
AA	T253	3/10			X	X	24830	6 IC TUBE	418.1 (22326)
	T2<A						24831		ARCHIVE
	T351						24832		418.1 (22327)
	T352						24833		ARCHIVE
	T353						24834		418.1 (22328)
	T354						24835		ARCHIVE
AAE	T151						24836		418.1 (22329)
	T152						24837		ARCHIVE
	T153						24838		418.1 (22330)
	T154						24839		ARCHIVE

FIELD DISPOSITION: * Samples 24834 & 24835 were not received.

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		03-10-89 5 pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*	MICHAEL N. NEUENBURG	DATE/TIME
Michael N. Neuenburg		3/11/89 8:30

METHOD OF SHIPMENT: Fed EX

LABORATORY DISPOSITION: SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☒ STORAGE ☐

Return to Emanuel Kalkoury Analysis Santa Ana

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212660

L.P. 1500

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A3E	T155	3/10			x	x	24840	6" TUBE	418.1 (22331)
↓	T156	↓			↓	↓	24841	↓	ARCHIVE

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		03-10-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Neuenburg MICHAEL N. NEUENBURG		3/10/89 4:30

METHOD OF SHIPMENT: Fed Ex

SAMPLES RECEIVED

LABORATORY DISPOSITION: GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Return analysis to Emanuel Falkowy Santa Ana FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren-Analytical Laboratory
Chain of Custody Record

212661

L.F. 1516

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A3E	T2 ~~R~~ S1	3-13-89				X	24842	6" tubes	418.1 (22525)
	T2 S2						24843		Archive
	T2 S3						24844		418.1 (22526)
	T2 S4						24845		Archive
	T3 S1						24846		418.1 (22527)
	T3 S2						24847		Archive
	T3 S3						24848		418.1 (22528)
	T3 S4						24849		Archive
A2K	T1 S1						24850		418.1 (22529)
	T1 S2						~~24851~~	~~12951~~	Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☑ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3-13-89 5pm

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME

RECEIVED FOR LABORATORY BY:* Michael M. Neuenburg MICHAEL M. NEUENBURG DATE/TIME 3/14/89 10:30

METHOD OF SHIPMENT: Fed EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

Return to Emanuel Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212662

V.P. 1516

PROJECT DESIGNATION McGranahan 4.0

SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A2K	T1S3	3-13-99				X	12952	6" tubes	~~12~~ 418.1 (2253)
	T1S4						12953		Archive
	T2S1						12954		418.1 (22531)
	T2S2						12955		Archive
	T2S3						12956		Archive
	T2S4						12957		Archive
	T2S5						12958		418.1 (22532)
	T2S6						12959		Archive
	T2S7						12960		418.1 (2253)
	T2S8						12961		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3-13-99 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:* Michael N. Neuenburg	MICHAEL N. NEUENBURG	DATE/TIME 3/14/99 10:30

METHOD OF SHIPMENT:

FED EX

LABORATORY DISPOSITION:

SAMPLES RECEIVED COLD

IMMEDIATE ANALYSIS ☒ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Return analysis to Emanuel Fakaros FREEZER ☐ ID _____ ☐ ☐

Santa Rosa CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212663

W.P. 1516

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel Ken Beck

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	WATER GRAB	SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A2I/J	T1S1	3·13·89				X	12962	6" tubes	418.1 (2253)
	T1S2						12963		Archive
	T1S3						12964		418.1 (2253)
	T1S4						12965		Archive
	T2S1						12966		418.1 (2253)
	T2S2						12967		Archive
	T2S3						12968		418.1 (2253)
	T2S4						12969		Archive
	T3S1						12970		418.1 (2253)
	T3S2						12971		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☑ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel Ken Beck		3·13·89 5PM
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*	MICHAEL J. NEUENBURG	DATE/TIME
Michael J. Neuenburg		3/14/89 11:30

METHOD OF SHIPMENT:
Fed Ex

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☒ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Return analysis to McLaren Santa Ana RECEIVED IN GOOD CONDITION FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212664

L.P. 1516

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A2I/J	T3S3	3·13·89				X	12972	6" tubes	418.1 (22539)
↓	T3S4						12973		Archive
A2C	T1S1						12974		418.1 (22540)
	T1S2						12975		Archive
	T1S3						12976		418.1 (22541)
	T1S4						12977		Archive
	T2S1						12978		418.1 (22542)
	T2S2						12979		Archive
	T2S3						12980		418.1 (22543)
↓	T2S4	↓				↓	12981	↓	Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3·13·89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*	MICHAEL J. NEUENSBURG	DATE/TIME
Michael J. Neuenburg		3/14/89 11:30

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION:

SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE:

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

Analysis to Emanuel F. Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212665

W.P. 1516

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A2C	T351	3.13.89				X	12982	6" tubes	418.1 (2254)
	T353						12983		Archive
	T352						12984		418.1 (225)
	T354						12985		Archive
A3A	T191						12986		418.1 (225VE)
	T192						12987		Archive
	T193						12988		418.1 (2254)
	T194						12989		~~418~~ Archive
	T195						12990		418.1 (225)
	T196						12991		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

		DATE/TIME
RELINQUISHED BY:* Laurie Benkel / Jan Bal	RECEIVED BY:*	3.13.89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:* Michael N. Neuenburg - MICHAEL N. NEUENBURG		DATE/TIME 3/14/89 10:30

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ SAMPLES RECEIVED IN GOOD CONDITION

analysis to Orange Santa Ana

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

S 21266

aren Analytical Laboratory
n of Custody Record

L.P. 1519

REPORTS TO: EMMANUAL FAKHOURY

SAMPLES TAKEN BY: Laurie Benkel

SIGNATION McGranahan 4.0

SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	WATER GRAB	SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
T1S1	3-14-89				X	12992	6" tubes	418.1 (22568)
T1S2						12993		Archive
T1S3						12994		418.1 (22569)
T1S4						12995		Archive
T2S1						12996		418.1 (22570)
T2S2						12997		Archive
T2S3						12998		418.1 (22571)
T2S4						12999		Archive
T1S1						13000		418.1 (22572)
T1S2	↓				↓	12901	↓	Archive

SPOSITION:

ATE DELIVERY ☒

SECURED ☐ YES ☐ NO

RAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

QUISHED BY:* Laurie Benkel Lan Bell	RECEIVED BY:*	DATE/TIME 3-15-89 5pm
QUISHED BY:*	RECEIVED BY:*	DATE/TIME
		DATE/TIME

IVED FOR LABORATORY BY:* Michael N. Neuenburg MICHAEL N. NEUENBURG — 3/15/89 10:00

HOD OF SHIPMENT: FedEX

SAMPLES RECEIVED IN GOOD CONDITION

ORATORY DISPOSITION:

ATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ FREEZER ☐ ID _____ CABINET ☐ ID _____

SECURED ☐ YES ☐ NO

turn Analysis to Emanuel Falkoury Santa Ana

R T NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212667

V.P. 1519

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
5B-C/D	T1S3	3-14-89				X	12902	6" tubes	418.1 (22573)
	T1S4						12903		Archive
	T2S1						12904		418.1 (22574)
	T2S2						12905		Archive
	T2S3						12906		418.1 (22575)
	T2S4						12907		Archive
5A-G	T1S1						12908		418.1 (22576)
	T1S2						12909		Archive
	T1S3						12910		418.1 (22577)
	T1S4						12911		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benkel		3-14-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Neuenburg MICHAEL H. NEUENBURG		3/15/89 10:00

METHOD OF SHIPMENT: Fed EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

SAMPLES RECEIVED IN GOOD CONDITION

Return Analysis to Emanuel Faibourn Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212668

L.P. 1519

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benket

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
A-G	T1S5	3-14-89				X	12912	6" tubes	418.1 (=2577)
	T1S6						12913		Archive
K	T3S1						12914		418.1 (=2579)
	T3S2						12915		Archive
	T3S3						12916		418.1 (=2580)
	T3S4						12917		Archive
	T4S1						12912		418.1 (=2581)
	T4S2						12919		Archive
	T4S3						12920		418.1 (=2582)
	T4S4						12921		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Laurie Benket		3-14-89 5 pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Neuenburg	MICHAEL N. NEUENBURG	3/15/89 10:00

METHOD OF SHIPMENT: Fed Ex

LABORATORY DISPOSITION: SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

Return copies to Emanuel Falkowy Santa Ana

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212669

L.P. 1526

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Laurie Benkel

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SAG	T2S1	3-15-89				X	12922	6" tubes	418.1 (22658)
	T2S2						12923		Archive
	T2S3						12924		418.1 (22645)
	T2S4						12925		Archive
	T2S5						12926		418.1 (22[illegible]
	T2S6						12927		Archive
2G	T1S1						12928		418.1 (22647)
	T1S2						12929		Archive
	T1S3						12930		418.1 (22647)
	T1S4						12931		Archive

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:* Laurie Benkel	RECEIVED BY:*	DATE/TIME 3-15-89 5pm
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:* Michael A. Neuenburg	MICHAEL A. NEUENBURG	DATE/TIME 3/16/89 10:15

METHOD OF SHIPMENT: FED EX

LABORATORY DISPOSITION:

SAMPLES RECEIVED IN GOOD CONDITION

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

Return analysis to Enrique Fakhoury Santa Ana FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

APPENDIX B

LABORATORY DATA SHEETS AND CHAIN-OF-CUSTODY FORMS
SOIL BORINGS

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0 — Lab ID: 23097

Sample Location: SB5-5A-I 10.5 - 11.0' — Date Collected: 03/22/89

Sample Number: 24662 — Date Analyzed: 04/06/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.1	0.1
1221	< 0.2	0.2
1232	< 0.1	0.1
1242	< 0.1	0.1
1248	< 0.1	0.1
1254	< 0.1	0.1
1260	< 0.1	0.1

Surrogate Recovery: 79%

Comments: 1:2 dilution used in analysis due to matrix interference.

Analyst: J. M. Hoch — Reviewed By: S. Azimi-Galloway — Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23098

Sample Location: SB5-5A-I 10.5 - 11.0' — Date Sampled: 03/22/89

Sample Number: 24662 — Date Analyzed: 04/03/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	< 2500	2500.
Acetone	< 3800	3800.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	< 1400	1400.

Analyst: K. Badal (K. Badal) Reviewed By: R. L. James Date: 04/04/89

Laboratory Director: J. M. Bartell

McLaren

Lab ID: 23098

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	108	70-121
S2 = D8-Toluene	105	81-117
S3 = 4-Bromofluorobenzene	113	74-121

Comments:

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0

Lab ID: 23099

Sample Location: SB5-5A-I
10.5 - 11.0'

Date Collected: 03/22/89

Sample Number: 24662

Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 33000	33000.
Bis(2-chloroethyl)ether	< 33000	33000.
2-Chlorophenol	< 33000	33000.
1,3-Dichlorobenzene	< 33000	33000.
1,4-Dichlorobenzene	< 33000	33000.
Benzyl alcohol	< 33000	33000.
2-Methylphenol	< 33000	33000.
1,2-Dichlorobenzene	< 33000	33000.
Bis(2-chloroisopropyl)ether	< 33000	33000.
4-Methylphenol	< 33000	33000.
N-Nitrosodi-n-propylamine	< 33000	33000.
Hexachloroethane	< 33000	33000.
Nitrobenzene	< 33000	33000.
Isophorone	< 33000	33000.
2,4-Dimethylphenol	< 33000	33000.
1,2,4-Trichlorobenzene	< 33000	33000.
2-Nitrophenol	< 33000	33000.
Benzoic acid	< 160000	160000.
Bis(2-chloroethoxy)methane	< 33000	33000.
2,4-Dichlorophenol	< 33000	33000.
Naphthalene	< 33000	33000.
4-Chloroaniline	< 33000	33000.
Hexachlorobutadiene	< 33000	33000.
4-Chloro-3-methlyphenol	< 33000	33000.
2-Methylnaphthalene	< 33000	33000.
Hexachlorocyclopentadiene	< 33000	33000.
2,4,6-Trichlorophenol	< 33000	33000.
2,4,5-Trichlorophenol	< 160000	160000.
2-Chloronaphthalene	< 33000	33000.
3-Nitroaniline	< 160000	160000.
Dimethylphthalate	< 33000	33000.
2,6-Dinitrotoluene	< 33000	33000.
Acenaphthylene	< 33000	33000.
2-Nitroaniline	< 160000	160000.
Acenaphthene	< 33000	33000.
2,4-Dinitrophenol	< 160000	160000.
4-Nitrophenol	< 160000	160000.
2,4-Dinitrotoluene	< 33000	33000.
Dibenzofuran	< 33000	33000.

McLaren

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 33000	33000.
4-Chlorophenyl phenyl ether	< 33000	33000.
Fluorene	< 33000	33000.
4-Nitroaniline	< 160000	160000.
4,6-Dinitro-2-methylphenol	< 160000	160000.
N-Nitrosodiphenylamine	< 33000	33000.
4-Bromophenyl phenyl ether	< 33000	33000.
Hexachlorobenzene	< 33000	33000.
Pentachlorophenol	< 160000	160000.
Phenanthrene	< 33000	33000.
Anthracene	< 33000	33000.
Butyl benzyl phthalate	< 33000	33000.
Fluoranthene	< 33000	33000.
Pyrene	< 33000	33000.
Di-n-butylphthalate	< 33000	33000.
3,3'-Dichlorobenzidine	< 66000	66000.
Benzo(a)anthracene	< 33000	33000.
Bis(2-ethylhexyl)phthalate	< 33000	33000.
Chrysene	< 33000	33000.
Di-n-octylphthalate	< 33000	33000.
Benzo(b)fluoranthene	< 33000	33000.
Benzo(k)fluoranthene	< 33000	33000.
Benzo(a)pyrene	< 33000	33000.
Indeno(1,2,3-c,d)pyrene	< 33000	33000.
Dibenz(a,h)anthracene	< 33000	33000.
Benzo(g,h,i)perylene	< 33000	33000.

Surrogates	% Recovery
2-Fluorophenol	*
Phenol d-6	*
Nitrobenzene-d5	*
2-Fluorobiphenyl	*
2,4,6-Tribromophenol	*
Terphenyl-d14	*

Comments: * Sample was diluted 1:100. Matrix was viscous and deeply colored. Soil matrix required a clean-up procedure. All surrogates were diluted out. 2-Methylnaphthalene was present at 5770 ppb.

Analyst: R. D. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23209

Sample Location: SB7-5B-E 20.5 - 21.0'

Date Collected: 03/23/89

Sample Number: 24684

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	300.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23210

Sample Location: SB7-5B-E 25.5 - 26.0'

Date Collected: 03/23/89

Sample Number: 24685

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	300.	50.

Comments: 1:10 dilution used for analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23211

Sample Location: SB7-5B-E 30.5 - 31'

Date Collected: 03/23/89

Sample Number: 24686

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	70.	15.

Comments: 1:3 dilution used for analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23212

Sample Location: SB7-5B-E 35.5 - 36'

Date Collected: 03/23/89

Sample Number: 24687

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	170.	15.

Comments: 1:3 dilution used for analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23213

Sample Location: SB7-5B-E 40.5 - 41'

Date Collected: 03/23/89

Sample Number: 24688

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	200.	50.

Comments: 1:10 dilution used for analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0

Lab ID: 23214

Sample Location: SB7-5B-E 40.5 - 41.0'

Date Collected: 03/23/89

Sample Number: 24688

Date Analyzed: 04/06/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.1	0.1
1221	< 0.2	0.2
1232	< 0.1	0.1
1242	< 0.1	0.1
1248	< 0.1	0.1
1254	< 0.1	0.1
1260	< 0.1	0.1

Surrogate Recovery: 60% *

Comments: 1:2 dilution used in analysis.
* Low surrogate due to matrix interference.

Analyst: J. M. Hoch

Reviewed By: S. Azimi-Galloway

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

PESTICIDES
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0

Lab ID: 23214

Sample Location: SB7-5B-E 40.5 - 41.0'

Date Collected: 03/23/89

Sample Number: 24688

Date Analyzed: 04/06/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Alpha-BHC	< 0.01	0.01
Gamma-BHC	< 0.01	0.01
Delta-BHC	< 0.01	0.01
Beta-BHC	< 0.01	0.01
Heptachlor	< 0.01	0.01
Aldrin	< 0.01	0.01
Heptachlor Epoxide	< 0.01	0.01
Endosulfan I	< 0.01	0.01
4,4'-DDE	< 0.01	0.01
Dieldrin	< 0.01	0.01
Endrin	< 0.01	0.01
4,4'-DDD	< 0.01	0.01
Endosulfan II	< 0.01	0.01
4,4'-DDT	< 0.01	0.01
Endrin Aldehyde	< 0.01	0.01
Endosulfan Sulfate	< 0.01	0.01
Toxapene	< 0.2	0.2
Chlordane	< 0.04	0.04

Surrogate Recovery: 60% *

Comments: 1:2 dilution used for analysis.
* Low surrogate due to matrix interference.

Analyst: J. M. Hoch

Reviewed By: S. Azimi-Galloway

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23215

Sample Location: SB7-5B-E 40.5 - 41' — Date Sampled: 03/23/89

Sample Number: 24688 — Date Analyzed: 04/05/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	4600.	2500.
Acetone	< 2500	4300.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	900.	500.

Analyst: K. Badal (K. Badal) Reviewed By: R. L. James Date: 04/06/89

Laboratory Director: J. M. Bartell

McLaren

Lab ID: 23215

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	95	70-121
S2 = D8-Toluene	99	81-117
S3 = 4-Bromofluorobenzene	98	74-121

Comments:

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0 | Lab ID: 23216

Sample Location: SB7-5B-E 40.5 - 41' | Date Collected: 03/23/89

Sample Number: 24688 | Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	1600.	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	< 330	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	73
Phenol d-6	58
Nitrobenzene-d5	78
2-Fluorobiphenyl	74
2,4,6-Tribromophenol	60
Terphenyl-d14	64

Comments:

Analyst: R. L. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23217

Sample Location: SB7-5B-E 50.5 - 51.0'

Date Collected: 03/23/89

Sample Number: 24689

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

METAL ANALYSIS

Project: McGranahan & Carlson

Lab ID: 21858

Sample Location: B3 7.5-8' (SB-8) GB

Date Sampled: 01/27/89

Sample Number: 23815

Date Analyzed: 03/06/89

	METAL (SYMBOL)/EPA METHOD	CONCENTRATION ug/ml (ppm)	REPORTING LIMIT ug/ml (ppm)
	Antimony (Sb)/7040	Not Requested	0.5
*	Arsenic (As)/7061	Not Requested	0.05
	Barium (Ba)/7080	11.	1.
	Beryllium (Be)/7090	Not Requested	0.5
	Cadmium (Cd)/7130	Not Requested	0.01
	Chromium (Cr)/7190	Not Requested	0.02
	Cobalt (Co)/7200	Not Requested	0.08
	Copper (Cu)/7210	< 0.09	0.09
	Lead (Pb)/7420	2.	0.05
**	Mercury (Hg)/7470	Not Requested	0.002
	Molybdenum (Mo)/7480	Not Requested	1.
	Nickel (Ni)/7520	Not Requested	0.2
*	Selenium (Se)/7741	Not Requested	0.01
	Silver (Ag)/7760	Not Requested	0.05
	Thallium (Tl)/7840	Not Requested	1.
	Vanadium (V)/7910	Not Requested	0.5
	Zinc (Zn)/7950	Not Requested	0.08
	Hex. Chromium (CrVI)/7195	Not Requested	0.05
	Titanium (Ti)/283.1	Not Requested	0.6
	Organic Lead (Pb)/DHS	Not Requested	0.05
	Magnesium (Mg)/7450	Not Requested	0.07
	Calcium (Ca)/7140	Not Requested	0.1

* Hydride generation method
** Cold vapor method

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: S. Azimi-Galloway

Date: 03/06/89

Laboratory Director: J. M. Bartell

McLaren Environmental Engineering

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan & Carlson
Lab ID: 21286

Sample Location: B3 20.5-21'
Date Collected: 01/27/89

Sample Number: 23819
Data Analyzed: 02/28/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	5700.	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

Lab ID: 21286

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	< 330	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	28
Phenol d-6	50
Nitrobenzene-d5	28
2-Fluorobiphenyl	35
2,4,6-Tribromophenol	28
Terphenyl-d14	23

Comments:

Analyst: L. A. Mooney Reviewed By: R. L. James Date: 03/07/89

Laboratory Director: J. M. Bartell

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan & Carlson

Lab ID: 21285

Sample Location: B3 20.5-21'

Date Sampled: 01/27/89

Sample Number: 23819

Date Analyzed: 02/17/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Chloromethane	< 4	4.
Bromomethane	< 4	4.
Vinyl Chloride	< 4	4.
Chloroethane	< 4	4.
Methylene Chloride	< 10	10.
Acetone	< 10	10.
Carbon Disulfide	< 2	2.
1,1-Dichloroethene	< 2	2.
1,1-Dichloroethane	< 2	2.
1,2-Dichloroethene(cis/trans)	< 2	2.
Chloroform	< 2	2.
1,2-Dichloroethane	< 2	2.
2-Butanone	< 10	10.
1,1,1,-Trichloroethane	< 2	2.
Carbon Tetrachloride	< 2	2.
Bromodichloromethane	< 2	2.
1,2-Dichloropropane	< 2	2.
Trans-1,3-Dichloropropene	< 2	2.
Trichloroethene	< 2	2.
Benzene	< 2	2.
1,1,2-Trichloroethane	< 2	2.
Dibromochloromethane	< 2	2.
Cis-1,3-Dichloropropene	< 2	2.
Bromoform	< 2	2.
4-Methyl-2-pentanone	< 10	10.
2-Hexanone	< 10	10.
1,1,2,2-Tetrachloroethane	< 2	2.
Tetrachloroethylene	< 4	4.
Toluene	< 2	2.
Chlorobenzene	< 2	2.
Ethyl Benzene	< 2	2.
Styrene	< 2	2.
Total Xylene	< 2	2.

Analyst: L. A. Mooney Reviewed By: R. I. James Date: 02/24/89

Laboratory Director: J. M. Bartell

McLaren Environmental Engineering

Lab ID: 21285

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	124	70-121
S2 = D8-Toluene	100	81-117
S3 = 4-Bromofluorobenzene	109	74-121

Comments: 1:2 dilution used in analysis.

PESTICIDES
MODIFIED EPA METHOD 8080

Project: MC & C

Lab ID: 21287

Sample Location: B3 20.5-21'

Date Collected: 01/27/89

Sample Number: 23819

Date Analyzed: 03/02/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Alpha-BHC	< 0.02	0.02
Gamma-BHC	< 0.02	0.02
Delta-BHC	< 0.02	0.02
Beta-BHC	< 0.02	0.02
Heptachlor	< 0.02	0.02
Aldrin	< 0.02	0.02
Heptachlor Epoxide	< 0.02	0.02
Endosulfan I	< 0.02	0.02
4,4'-DDE	< 0.02	0.02
Dieldrin	< 0.02	0.02
Endrin	< 0.02	0.02
4,4'-DDD	< 0.02	0.02
Endosulfan II	< 0.02	0.02
4,4'-DDT	< 0.02	0.02
Endrin Aldehyde	< 0.02	0.02
Endosulfan Sulfate	< 0.02	0.02
Toxapene	< 0.5	0.5
Chlordane	< 0.1	0.1

Surrogate Recovery: 45%

Comments: 1:5 dilution used due to matrix interference.

Analyst: E. Dowe & Lor: J. M. Hoch Reviewed By: S. Azimi-Galloway Date: 03/09/89

Laboratory Director: J. M. Bartell

McLaren Environmental Engineering

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: MC & C

Lab ID: 21287

Sample Location: B3 20.5-21'

Date Collected: 01/27/89

Sample Number: 23819

Date Analyzed: 03/02/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.2	0.2
1221	< 0.5	0.5
1232	< 0.2	0.2
1242	< 0.2	0.2
1248	< 0.2	0.2
1254	< 0.2	0.2
1260	< 0.2	0.2

Surrogate Recovery: 45%

Comments: 1:5 dilution used due to matrix interference.

Analyst: E. Dawe for J. M. Hoch

Reviewed By: S. Azimi-Galloway

Date: 03/09/89

Laboratory Director: J. M. Bartell

McLaren Environmental Engineering

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23100

Sample Location: SB5-5A-I 15.5 - 16.0'

Date Collected: 03/22/89

Sample Number: 24663

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23101

Sample Location: SB5-5A-I 20.5 - 21.0'

Date Collected: 03/22/89

Sample Number: 24664

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23102

Sample Location: SB5-5A-I 25.5 - 26.0'

Date Collected: 03/22/89

Sample Number: 24665

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23103

Sample Location: SB5-5A-I 30.5 - 31.0'

Date Collected: 03/22/89

Sample Number: 24666

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23104

Sample Location: SB5-5A-I 35.5 - 36.0'

Date Collected: 03/22/89

Sample Number: 24667

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0

Lab ID: 23107

Sample Location: SB5-5A-I 50.5 - 51.0'

Date Collected: 03/22/89

Sample Number: 24669

Date Analyzed: 04/03/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.05	0.05
1221	< 0.10	0.10
1232	< 0.05	0.05
1242	< 0.05	0.05
1248	< 0.05	0.05
1254	< 0.05	0.05
1260	< 0.05	0.05

Surrogate Recovery: 77%

Comments:

Analyst: J. M. Hoch Reviewed By: S. Azimi-Galloway Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23108

Sample Location: SB5-5A-I 50.5 - 51.0' — Date Sampled: 03/22/89

Sample Number: 24669 — Date Analyzed: 04/04/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	< 2500	2500.
Acetone	< 2500	2500.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	< 500	500.

Analyst: K. Badal (K. Badal) Reviewed By: R. L. James Date: 04/04/89

Laboratory Director: J. M. Bartell

McLaren

Lab ID: 23108

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	88	70-121
S2 = D8-Toluene	97	81-117
S3 = 4-Bromofluorobenzene	97	74-121

Comments:

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0

Lab ID: 23109

Sample Location: SB5-5A-I
50.5 - 51.0'

Date Collected: 03/22/89

Sample Number: 24669

Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	< 330	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0

Lab ID: 23109

Sample Location: SB5-5A-I
50.5 - 51.0'

Date Collected: 03/22/89

Sample Number: 24669

Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	< 330	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

McLaren

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	< 330	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	70
Phenol d-6	57
Nitrobenzene-d5	71
2-Fluorobiphenyl	88
2,4,6-Tribromophenol	54
Terphenyl-d14	61

Comments:

Analyst: R. L. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23110

Sample Location: SB5-5A-I 60.5 - 61.0'

Date Collected: 03/22/89

Sample Number: 24670

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23111

Sample Location: SB6-5B-I 5.5 - 6.0'

Date Collected: 03/22/89

Sample Number: 24671

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23115

Sample Location: SB6-5B-I 10.5 - 11.0'

Date Collected: 03/22/89

Sample Number: 24672

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23116

Sample Location: SB6-5B-I 15.5 - 16.0'

Date Collected: 03/22/89

Sample Number: 24673

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23117

Sample Location: SB6-5B-I 20.5 - 21.0'

Date Collected: 03/22/89

Sample Number: 24674

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Rameyanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23118

Sample Location: SB6-5B-I 25.5 - 26.0'

Date Collected: 03/22/89

Sample Number: 24675

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23119

Sample Location: SB6-5B-I 30.5 - 31.0'

Date Collected: 03/22/89

Sample Number: 24676

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23120

Sample Location: SB6-5B-I 35.5 - 36.0'

Date Collected: 03/22/89

Sample Number: 24677

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23121

Sample Location: SB6-5B-I 40.5 - 41.0'

Date Collected: 03/22/89

Sample Number: 24678

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	5.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23122

Sample Location: SB6-5B-I 50.5 - 51.0'

Date Collected: 03/22/89

Sample Number: 24679

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23126

Sample Location: SB6-5B-I 60.5 - 61.0'

Date Collected: 03/22/89

Sample Number: 24680

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23127

Sample Location: SB5-5A-I 5.5 - 6.0'

Date Collected: 03/22/89

Sample Number: 24661

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23128

Sample Location: SB5-5A-I 10.5 - 11.0'

Date Collected: 03/22/89

Sample Number: 24662

Date Analyzed: 04/06/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	6400.	620.

Comments: 1:125 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23203

Sample Location: SB7-5B-E 5.5 - 6.0'

Date Collected: 03/23/89

Sample Number: 24681

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	1100.	250.

Comments: 1:50 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23204

Sample Location: SB7-5B-E 10.5 - 11.0'

Date Collected: 03/23/89

Sample Number: 24682

Date Analyzed: 04/05/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	3500.	500.

Comments: 1:100 dilution used in analysis.

Analyst: F. Rameezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23205

Sample Location: SB7-5B-E 15.5 - 16.0'

Date Collected: 03/23/89

Sample Number: 24683

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	1100.	200.

Comments: 1:40 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

PESTICIDES
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0 — Lab ID: 23206

Sample Location: ~~SB7-5B-E~~ ~~10.5 - 16.0'~~ SB 15. — Date Collected: 03/23/89

Sample Number: 24683 — Date Analyzed: 04/04/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Alpha-BHC	< 0.005	0.005
Gamma-BHC	< 0.005	0.005
Delta-BHC	< 0.005	0.005
Beta-BHC	< 0.005	0.005
Heptachlor	< 0.005	0.005
Aldrin	< 0.005	0.005
Heptachlor Epoxide	< 0.005	0.005
Endosulfan I	< 0.005	0.005
4,4'-DDE	< 0.005	0.005
Dieldrin	< 0.005	0.005
Endrin	< 0.005	0.005
4,4'-DDD	< 0.005	0.005
Endosulfan II	< 0.005	0.005
4,4'-DDT	< 0.005	0.005
Endrin Aldehyde	< 0.005	0.005
Endosulfan Sulfate	< 0.005	0.005
Toxapene	< 0.10	0.10
Chlordane	< 0.02	0.02

Surrogate Recovery: 107%

Comments:

Analyst: J. M. Hoch — Reviewed By: S. Azimi-Galloway — Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0 — Lab ID: 23206

Sample Location: SB7-5B-E 10.5 - 16.0' (SB15) — Date Collected: 03/23/89

Sample Number: 24683 — Date Analyzed: 04/04/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.05	0.05
1221	< 0.10	0.10
1232	< 0.05	0.05
1242	< 0.05	0.05
1248	< 0.05	0.05
1254	< 0.05	0.05
1260	< 0.05	0.05

Surrogate Recovery: 107%

Comments:

Analyst: J. M. Hoch — Reviewed By: S. Azimi-Galloway — Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23207

Sample Location: SB7-5B-E 15.5 - 16.0' — Date Sampled: 03/23/89

Sample Number: 24683 — Date Analyzed: 04/04/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	< 2500	2500.
Acetone	< 2500	2500.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	< 500	500.

Analyst: K. Badal — Reviewed By: R. L. James — Date: 04/06/89

Laboratory Director: J. M. Bartell

McLaren

Lab ID: 23207

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	86	70-121
S2 = D8-Toluene	96	81-117
S3 = 4-Bromofluorobenzene	121	74-121

Comments:

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0 | Lab ID: 23208

Sample Location: SB7-5B-E 15.5 - 16.0' | Date Collected: 03/23/89

Sample Number: 24683 | Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	9700.	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	940.	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	65
Phenol d-6	55
Nitrobenzene-d5	101
2-Fluorobiphenyl	71
2,4,6-Tribromophenol	55
Terphenyl-d14	69

Comments:

Analyst: R. L. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23295

Sample Location: SB8-2-B 45.5 - 46.0'

Date Collected: 03/24/89

Sample Number: 24697

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23296

Sample Location: SB8-2-B 50.5 - 51.0'

Date Collected: 03/24/89

Sample Number: 24698

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	80.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23297

Sample Location: SB8-2-B 55.5 - 56.0'

Date Collected: 03/24/89

Sample Number: 24699

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	80.	10.

Comments: 1:2 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23298

Sample Location: SB8-2-B 60.5 - 61.0'

Date Collected: 03/24/89

Sample Number: 24700

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23281

Sample Location: SB9-3-E 20.0 - 21.0'

Date Collected: 03/24/89

Sample Number: 24704

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23282

Sample Location: SB9-3-E 25.5 - 26.0'

Date Collected: 03/24/89

Sample Number: 24705

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23283

Sample Location: SB9-3-E 30.5 - 31.0'

Date Collected: 03/24/89

Sample Number: 24706

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23218

Sample Location: SB9-3-E 5.5 - 6.0'

Date Collected: 03/23/89

Sample Number: 24701

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	300.	50.

Comments: 1:10 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23219

Sample Location: SB9-3-E 10.5 - 11.0'

Date Collected: 03/23/89

Sample Number: 24702

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	20.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23220

Sample Location: SB9-3-E 15.5 - 16.0'

Date Collected: 03/23/89

Sample Number: 24703

Date Analyzed: 04/07/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23284

Sample Location: SB9-3-E 35.5 - 36.0'

Date Collected: 03/24/89

Sample Number: 24707

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23285

Sample Location: SB9-3-E 40.5 - 41.0'

Date Collected: 03/24/89

Sample Number: 24708

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23286

Sample Location: SB9-3-E 50.5 - 51.0'

Date Collected: 03/24/89

Sample Number: 24709

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23287

Sample Location: SB9-3-E 60.5 - 61.0'

Date Collected: 03/24/89

Sample Number: 24710

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	20.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23272

Sample Location: SB10-4-A 10.5 - 11.0'

Date Collected: 03/24/89

Sample Number: 24712

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	1400.	250.

Comments: 1:50 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23271

Sample Location: SB10-4-A 5.5 - 6.0'

Date Collected: 03/24/89

Sample Number: 24711

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23273

Sample Location: SB10-4-A 15.5 - 16.0'

Date Collected: 03/24/89

Sample Number: 24721

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23274

Sample Location: SB10-4-A 20.5 - 21.0'

Date Collected: 03/24/89

Sample Number: 24722

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoon

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23275

Sample Location: SB10-4-A 25.5 - 26.0'

Date Collected: 03/24/89

Sample Number: 24723

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23276

Sample Location: SB10-4-A 30.5 - 31.0'

Date Collected: 03/24/89

Sample Number: 24724

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23277

Sample Location: SB10-4-A 35.5 - 36.0'

Date Collected: 03/24/89

Sample Number: 24725

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23288

Sample Location: SB8-2-B 25.5 - 26.0'

Date Collected: 03/24/89

Sample Number: 24693

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	120.	20.

Comments: 1:4 dilution used in analysis.

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23289

Sample Location: SB8-2-B 30.5 - 31.0'

Date Collected: 03/24/89

Sample Number: 24694

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	10.	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23290

Sample Location: SB8-2-B 35.5 - 36.0'

Date Collected: 03/24/89

Sample Number: 24695

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23291

Sample Location: SB8-2-B 40.5 - 41.0'

Date Collected: 03/24/89

Sample Number: 24696

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh Reviewed By: J. M. Hoch Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

PESTICIDES
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0

Lab ID: 23292

Sample Location: SB8-2-B 40.5 - 41.0'

Date Collected: 03/24/89

Sample Number: 24696

Date Analyzed: 04/07/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Alpha-BHC	< 0.005	0.005
Gamma-BHC	< 0.005	0.005
Delta-BHC	< 0.005	0.005
Beta-BHC	< 0.005	0.005
Heptachlor	< 0.005	0.005
Aldrin	< 0.005	0.005
Heptachlor Epoxide	< 0.005	0.005
Endosulfan I	< 0.005	0.005
4,4'-DDE	< 0.005	0.005
Dieldrin	< 0.005	0.005
Endrin	< 0.005	0.005
4,4'-DDD	< 0.005	0.005
Endosulfan II	< 0.005	0.005
4,4'-DDT	< 0.005	0.005
Endrin Aldehyde	< 0.005	0.005
Endosulfan Sulfate	< 0.005	0.005
Toxapene	< 0.10	0.10
Chlordane	< 0.02	0.02

Surrogate Recovery: 93%

Comments:

Analyst: J. M. Hoch Reviewed By: S. Azimi-Galloway Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23293

Sample Location: SB8-2-B 40.5 - 41.0' — Date Sampled: 03/24/89

Sample Number: 24696 — Date Analyzed: 04/05/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	< 2500	2500.
Acetone	< 4300	4300.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	< 500	500.

Analyst: K. Badal (K. Badal) Reviewed By: R. L. James Date: 04/06/89

Laboratory Director: J. M. Bartell

McLaren

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	< 330	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	79
Phenol d-6	66
Nitrobenzene-d5	73
2-Fluorobiphenyl	101
2,4,6-Tribromophenol	61
Terphenyl-d14	79

Comments:

Analyst: R. W. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

PESTICIDES
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0 | Lab ID: 23221

Sample Location: SB9-3-E 15.5 - 16.0' | Date Collected: 03/23/89

Sample Number: 24703 | Date Analyzed: 04/03/89

COMPOUND	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
Alpha-BHC	< 0.005	0.005
Gamma-BHC	< 0.005	0.005
Delta-BHC	< 0.005	0.005
Beta-BHC	< 0.005	0.005
Heptachlor	< 0.005	0.005
Aldrin	< 0.005	0.005
Heptachlor Epoxide	< 0.005	0.005
Endosulfan I	< 0.005	0.005
4,4'-DDE	< 0.005	0.005
Dieldrin	< 0.005	0.005
Endrin	< 0.005	0.005
4,4'-DDD	< 0.005	0.005
Endosulfan II	< 0.005	0.005
4,4'-DDT	< 0.005	0.005
Endrin Aldehyde	< 0.005	0.005
Endosulfan Sulfate	< 0.005	0.005
Toxapene	< 0.10	0.10
Chlordane	< 0.02	0.02

Surrogate Recovery: 80%

Comments:

Analyst: J. M. Hoch | Reviewed By: S. Azimi-Galloway | Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

POLYCHLORINATED BIPHENYLS
MODIFIED EPA METHOD 8080

Project: McGranahan 4.0 — Lab ID: 23221

Sample Location: SB9-3-E 15.5 - 16.0' — Date Collected: 03/23/89

Sample Number: 24703 — Date Analyzed: 04/03/89

Aroclor Type	Analyte Concentration ug/g (ppm)	Reporting Limit ug/g (ppm)
1016	< 0.05	0.05
1221	< 0.10	0.10
1232	< 0.05	0.05
1242	< 0.05	0.05
1248	< 0.05	0.05
1254	< 0.05	0.05
1260	< 0.05	0.05

Surrogate Recovery: 80%

Comments:

Analyst: J. M. Hoch — Reviewed By: S. Azimi-Galloway — Date: 04/07/89

Laboratory Director: J. M. Bartell

McLaren

HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: McGranahan 4.0 — Lab ID: 23222

Sample Location: SB9-3-E 15.5 - 16.0' — Date Sampled: 03/23/89

Sample Number: 24703 — Date Analyzed: 04/05/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Chloromethane	< 1000	1000.
Bromomethane	< 1000	1000.
Vinyl Chloride	< 1000	1000.
Chloroethane	< 1000	1000.
Methylene Chloride	< 2500	2500.
Acetone	< 2500	2500.
Carbon Disulfide	< 500	500.
1,1-Dichloroethene	< 500	500.
1,1-Dichloroethane	< 500	500.
1,2-Dichloroethene(cis/trans)	< 500	500.
Chloroform	< 500	500.
1,2-Dichloroethane	< 500	500.
2-Butanone	< 2500	2500.
1,1,1,-Trichloroethane	< 500	500.
Carbon Tetrachloride	< 500	500.
Bromodichloromethane	< 500	500.
1,2-Dichloropropane	< 500	500.
Trans-1,3-Dichloropropene	< 500	500.
Trichloroethene	< 500	500.
Benzene	< 500	500.
1,1,2-Trichloroethane	< 500	500.
Dibromochloromethane	< 500	500.
Cis-1,3-Dichloropropene	< 500	500.
Bromoform	< 500	500.
4-Methyl-2-pentanone	< 2500	2500.
2-Hexanone	< 2500	2500.
1,1,2,2-Tetrachloroethane	< 500	500.
Tetrachloroethylene	< 1000	1000.
Toluene	< 500	500.
Chlorobenzene	< 500	500.
Ethyl Benzene	< 500	500.
Styrene	< 500	500.
Total Xylene	< 500	500.
Freon 113	< 500	500.

Analyst: K. Badal (K. Badal) Reviewed By: R. L. James Date: 04/06/89

Laboratory Director: J. M. Bartell

McLaren

Lab ID: 23222

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	89	70-121
S2 = D8-Toluene	108	81-117
S3 = 4-Bromofluorobenzene	108	74-121

Comments:

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0

Lab ID: 23223

Sample Location: SB9-3-E 15.5 - 16.0'

Date Collected: 03/23/89

Sample Number: 24703

Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	< 330	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

McLaren

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Diethylphthalate	< 330	330.
4-Chlorophenyl phenyl ether	< 330	330.
Fluorene	< 330	330.
4-Nitroaniline	< 1600	1600.
4,6-Dinitro-2-methylphenol	< 1600	1600.
N-Nitrosodiphenylamine	< 330	330.
4-Bromophenyl phenyl ether	< 330	330.
Hexachlorobenzene	< 330	330.
Pentachlorophenol	< 1600	1600.
Phenanthrene	< 330	330.
Anthracene	< 330	330.
Butyl benzyl phthalate	< 330	330.
Fluoranthene	< 330	330.
Pyrene	< 330	330.
Di-n-butylphthalate	< 330	330.
3,3'-Dichlorobenzidine	< 660	660.
Benzo(a)anthracene	< 330	330.
Bis(2-ethylhexyl)phthalate	< 330	330.
Chrysene	< 330	330.
Di-n-octylphthalate	< 330	330.
Benzo(b)fluoranthene	< 330	330.
Benzo(k)fluoranthene	< 330	330.
Benzo(a)pyrene	< 330	330.
Indeno(1,2,3-c,d)pyrene	< 330	330.
Dibenz(a,h)anthracene	< 330	330.
Benzo(g,h,i)perylene	< 330	330.

Surrogates	% Recovery
2-Fluorophenol	63
Phenol d-6	49
Nitrobenzene-d5	55
2-Fluorobiphenyl	77
2,4,6-Tribromophenol	46
Terphenyl-d14	55

Comments:

Analyst: R. L. James Reviewed By: S. Azimi-Galloway Date: 04/12/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23278

Sample Location: SB10-4-A 40.5 - 41.0'

Date Collected: 03/24/89

Sample Number: 24726

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23279

Sample Location: SB10-4-A
50.5 - 51.0'

Date Collected: 03/24/89

Sample Number: 24727

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

TOTAL PETROLEUM HYDROCARBONS
MODIFIED EPA METHOD 418.1

Project: McGranahan 4.0

Lab ID: 23280

Sample Location: SB10-4-A 60.5 - 61.0'

Date Collected: 03/24/89

Sample Number: 24728

Date Analyzed: 04/10/89

Soil	Analyte Concentration ug/g (ppm)	Detection Limit ug/g (ppm)
Total Concentration: Standard Oil and Grease Reference	< 5	5.

Comments:

Analyst: F. Ramezanzadeh

Reviewed By: J. M. Hoch

Date: 04/10/89

Laboratory Director: J. M. Bartell

McLaren

SEMI-VOLATILE ORGANICS
EPA METHOD 8270

Project: McGranahan 4.0

Lab ID: 23294

Sample Location: SB8-2-B 40.5 - ~~45~~ 41.0'

Date Collected: 03/24/89

Sample Number: 24697

Data Analyzed: 04/11/89

COMPOUND	Analyte Concentration ug/kg (ppb)	Reporting Limit ug/kg (ppb)
Phenol	< 330	330.
Bis(2-chloroethyl)ether	< 330	330.
2-Chlorophenol	< 330	330.
1,3-Dichlorobenzene	< 330	330.
1,4-Dichlorobenzene	< 330	330.
Benzyl alcohol	< 330	330.
2-Methylphenol	< 330	330.
1,2-Dichlorobenzene	< 330	330.
Bis(2-chloroisopropyl)ether	< 330	330.
4-Methylphenol	< 330	330.
N-Nitrosodi-n-propylamine	< 330	330.
Hexachloroethane	< 330	330.
Nitrobenzene	< 330	330.
Isophorone	< 330	330.
2,4-Dimethylphenol	< 330	330.
1,2,4-Trichlorobenzene	< 330	330.
2-Nitrophenol	< 330	330.
Benzoic acid	< 1600	1600.
Bis(2-chloroethoxy)methane	< 330	330.
2,4-Dichlorophenol	< 330	330.
Naphthalene	< 330	330.
4-Chloroaniline	< 330	330.
Hexachlorobutadiene	< 330	330.
4-Chloro-3-methlyphenol	< 330	330.
2-Methylnaphthalene	< 330	330.
Hexachlorocyclopentadiene	< 330	330.
2,4,6-Trichlorophenol	< 330	330.
2,4,5-Trichlorophenol	< 1600	1600.
2-Chloronaphthalene	< 330	330.
3-Nitroaniline	< 1600	1600.
Dimethylphthalate	< 330	330.
2,6-Dinitrotoluene	< 330	330.
Acenaphthylene	< 330	330.
2-Nitroaniline	< 1600	1600.
Acenaphthene	< 330	330.
2,4-Dinitrophenol	< 1600	1600.
4-Nitrophenol	< 1600	1600.
2,4-Dinitrotoluene	< 330	330.
Dibenzofuran	< 330	330.

McLaren

Lab ID: 23293

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	93	70-121
S2 = D8-Toluene	102	81-117
S3 = 4-Bromofluorobenzene	107	74-121

Comments:

McLaren

McLaren Environmental Analytical Laboratory
Sample Tracking Sheet

p. 1292

Date: 3/6/89
Reviewed By: JE

Client Project: MCC

Analysis Matrix: Water
Date Sampled: 1/27/89
Date Recieved:
Cost:

Analysis: Metals STLC

Sample I.D.	Lab I.D.	Container
B3 7.5-8'	21858	
	23815	STLC

Sample Vol/Wgt: 10g	Final Extract Vol: 100ml	Column					
		Date	3/6	3/6			
Sample I.D.: Line 1	Line 2	Dilution					
Lab I.D.: 21858	Date Prep'd: 3/4/89	Worker	FR	FR			
Units: ug/ml ppm	Date Anal'd: 3/6/89	Lab I.D.	21858	21858			

MDL	ANALYTE(S)	Final					
0.5	Antimony (Sb)/7040						
0.05	Arsenic (As)/7061						
1.	Barium (Ba)/7080	11.	11.34	10.86	100		
0.05	Beryllium (Be)/7090						
0.01	Cadmium (Cd)/7130						
0.02	Chromium (Cr)/7190						
0.08	Cobalt (Co)/7200						
0.09	Copper (Cu)/7210	<0.09	0.02		25		
0.05	Lead (Pb)/7420	2.	1.98		5		
0.002	Mercury (Hg)/7470						
1.	Molybdenum (Mo)/7480						
0.2	Nickel (Ni)/7520						
0.01	Selenium (Se)/7741						
0.05	Silver (Ag)/7760						
1.	Thallium (Tl)/7840						
0.5	Vanadium (V)/7910						
0.08	Zinc (Zn)/7950						
0.05	Hex. Chromium (CrVI)/7195						
0.6	Titanium (Ti)/283.1						
0.05	Organic Lead (Pb)/DHS						
0.07	Magnesium (Mg)/7450						
0.1	Calcium (Ca)/7140						

McLaren Analytical Laboratory
Chain of Custody Record

212931

L.P. 1585

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Tracy Berger Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB10-4-A	5.5-6.0'	3/24/89				✓	24711	Brass Tube	418.1
	10.5-11.0'						24712		418.1
	15.5-16.0'						24720		418.1
	20.5-21.0'						24722		418.1
	25.5-26.0'						24723		418.1
	30.5-31.0'						24724		418.1
	35.5-36.0'						24725		418.1
	40.5-41.0'						24726		418.1
	50.5-51.0'						24727		418.1
	60.5-61.0'						24728		418.1

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger Tracy Berger		3/24/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
		3/25/89 9:00

METHOD OF SHIPMENT: FEDEX

LABORATORY DISPOSITION: Cold & OK

IMMEDIATE ANALYSIS ☒ STORAGE ☐ SAMPLES RECEIVED IN GOOD CONDITION REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212932

L.P. 1585

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Tracy Berger Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB9-3-E	5.5-6.0'	3/24/89				✓	24704	Brass tube	418.1 VOID
	10.5-11.0'						24702		
	15.5-16.0'						24		
	20.0-21.0'						24704		418.1 (23281)
	25.5-26.0'						24705		418.1 (23282)
	30.5-31.0'						24706		418.1 (23283)
	35.5-36.0'						24707		418.1 (23284)
	40.5-41.0'						24708		418.1 (23285)
	50.5-51.0'						24709		418.1 (23286)
	60.5-61.0'						24710		418.1 (23287)

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger Tracy Berger		3/24/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
		3/25/89 9:00 am

METHOD OF SHIPMENT:

FED. EX

LABORATORY DISPOSITION: Cold & ok

IMMEDIATE ANALYSIS ☒ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

SAMPLES RECEIVED IN GOOD CONDITION FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212933

L.P. 1585

PROJECT DESIGNATION: Mc Granahan 4.0 — SAMPLES TAKEN BY:* Tracy Berger (Tracy Berger)

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB8-2-B	25.5-26.0'	3/24/89				✓	24693	Brass tube	418.1 (23288)
	30.5-31.0'						24694		418.1 (23289)
	35.5-36.0'						24695		418.1 (23290)
	40.5-41.0'						24696	(23292) (23291)	418.1, 8080, 8241, 8270
	45.5-46.0'						24697	(23293) (23294)	418.1 (23295)
	50.5-51.0'						24698		418.1 (23296)
	55.5-56.0'						24699		418.1 (23297)
	60.5-61.0'						24700		418.1 (23298)

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ FREEZER ☐ ID _____

SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger (Tracy Berger)		3/24/89

RECEIVED FOR LABORATORY BY:* _____ DATE/TIME 3/25/89 9:00a

METHOD OF SHIPMENT: FED. EX

LABORATORY DISPOSITION: Cold & OK

IMMEDIATE ANALYSIS ☒ STORAGE ☐

SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____ FREEZER ☐ ID _____ CABINET ☐ ID _____

SECURED ☐ YES ☐ NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212371

L.P. 1578

PROJECT DESIGNATION: MCGRANAHAN A.O. SAMPLES TAKEN BY:* Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	WATER GRAB	SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB7-5B-E	5.5-6.0'	3/23/89				✓	24681	Brass tube	418.1 (23203)
	10.5-11.0'						24682		418.1 (23204)
	15.5-16.0'						24683		(23205) 418.1, 8080 (23206), (23207) 8240, (23208) 8270
	"						"		
	20.5-21.0'						24684		418.1 (23209)
	25.5-26.0'						24685		418.1 (23210)
	30.5-31'						24686		418.1 (23211)
	35.5-36'						24687		418.1 (23212)
	40.5-41'						24688		(23213) 418.1, 8080 (232), (23215) 8240, (23216) 8270
	"						"		

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger Tracy Berger		3/23/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Heuring MICHAEL A. HEUERING		3/24/89 10:00

METHOD OF SHIPMENT: FED EX

LABORATORY DISPOSITION:

DATE ANALYSIS ☒

SAMPLES RECEIVED IN GOOD CONDITION

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

CABINET ☐ ID _____

SECURED ☐ YES ☐ NO

NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212930

L.P. 1578

PROJECT DESIGNATION: McGranahan 4.0 — SAMPLES TAKEN BY:* Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB9-5B-E	50.5-51'	3/23/89				✓	24689	Brass Tube	418.1 (23217)
SB9-3-E	5.5-6.0'						24701		418.1 (23218)
	10.5-11.0'						24702		418.1 (23219)
	15.5-16.0'						24703		(23220) 418.1, 8080 (23221); (23222) 8240, 8270 (23223)

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

* Sample # mistakenly received was 24689; sample identified by markings on brass tube. M.N 3/24/89

SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger		3/23/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Neuenburg	MICHAEL N. NEUENBURG	3/24/89 10:00

METHOD OF SHIPMENT: FED.EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☒ STORAGE ☐

SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

CABINET ☐ ID _____

SECURED ☐ YES ☐ NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

206785

L.R 1569

Tracy Berger

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB5-5A-I	5.5-6.0'	3/22/89					24661	Brass Tubes	418.1 (23092) (23095)
SB5-5A-I	10.5-11.0'	"					24662	23128	418.1 (23096) (23097), 8080, 8240 (23098), 8270 (23099)
"	"						"		
SB5-5A-I	15.5-16.0'						24663		418.1 (23100)
SB5-5A-I	20.5-21.0'						24664		418.1 (23101)
"	25.5-26.0'						24665		" (23102)
"	30.5-31.0'						24666		" (23103)
"	35.5-36.0'						24667		" (23104)
"	40.5-41.0'						24668		" (23105)
"	50.5-51.0'						24669		418.1 (23106), 8080 (23107), 8240 (23108), 8270 (23109)

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger Tracy Berger		3/22/89
RELINQUISHED BY:	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael N. Neuenburg MICHAEL N. NEUENBURG		3/23/89 10:00

METHOD OF SHIPMENT: FEDEX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☒ STORAGE ☐

SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212369

L.P. 1569 ~~1570~~ M.M.

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY: Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB5-5A-I	60.5-61.0'	3/22/89				✓	24670	Brass tube	418.1 (23110)
SB6-5B-I	5.5-6.0'	"				"	24671	"	418.1 (23111), ~~8080~~ (23112), ~~8240~~ (23113), ~~8270~~ (23114)
"	"	"				"	"	"	
"	10.5-11.0'	"				"	24672	"	418.1 (23115)
"	15.5-16.0'	"				"	24673	"	418.1 (23116)
"	20.5-21.0'	"				"	24674	"	" (23117)
"	25.5-26.0'	"				"	24675	"	" (23118)
"	30.5-31.0'	"				"	24676	"	" (23119)
"	35.5-36.0'	"				"	24677	"	" (23120)
"	40.5-41.0'	"				"	24678	"	" (23121)

FIELD DISPOSITION: ← 8249, 8270, 8080 cancelled per Enmarc 3/24/89 F.

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☒ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger Tracy Berger		3/22/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael M. Neuenburg MICHAEL M. NEUENBURG		3/23/89 10:00

METHOD OF SHIPMENT: FED EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☒ STORAGE ☐ SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212370

L.P. 569

Tracy Berger

PROJECT DESIGNATION McGranahan 4.0 SAMPLES TAKEN BY:* Tracy Berger

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
SB6 5B-I	50.5-51.0'	3/22/89				✓	24679	Brass liner	23123 418.1, 8080, 23124 8240, 8270
"	"						"		
"	60.5-61.0'						24680		418.1 23126

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

8240, 8270, 8080 unless per Emmanuel F. 3/24/89

SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Tracy Berger		3/22/89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Neuenburg MICHAEL N. NEUENBURG		3/23/89 10:00

METHOD OF SHIPMENT: FED EX

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☒ STORAGE ☐

SAMPLES RECEIVED IN GOOD CONDITION

REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212524

McGranahan & Carlson RUSH

PROJECT DESIGNATION McLC SAMPLES TAKEN BY:* Emmanuel Fakhoury

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
B3	17.5-18'	01-27-89				X	23818	Brass T	418.1, 20455
	20.5'-21'	01-27-89				X	23819	8240 2/28 8270 2/28 8080 2/28	418.1, 20456
B4	6'-6.5'	"				X	23820	"	418.1, Prime. Pollut.
	10.5'-11'					X	23821	"	418.1, 20457
	13.5'-14'					X	23822	"	418.1, 20458
	15.5'-15.5					X	23823	"	418.1, 20459
B1	3.5-4					X	23824	"	20460 418.1, Prime. Pollut.
	6.5'-7'					X	23825	"	418.1, 20461
	8'-8.5'					X	23826	"	418.1, 20462
	12.5-13.'					X	23827	"	418.1, 20463

FIELD DISPOSITION:
IMMEDIATE DELIVERY ☒
STORAGE ☐ REFRIGERATOR ☐ ID _____
FREEZER ☐ ID _____

* Samples arrived cool but the ice had melt
** Samples asked to be run for 8240/8270/8080 M.N. 2/16/89 M.N. 1/28/89
* * priority pollutant capable per E.F. 1/27/89
SECURED ☒ YES ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Emmanuel Fakhoury		
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Nemeburg		1/28/89 12:00

METHOD OF SHIPMENT: Air Freight

LABORATORY DISPOSITION:
IMMEDIATE ANALYSIS ☐ STORAGE ☐
REFRIGERATOR ☐ ID _____
FREEZER ☐ ID _____
CABINET ☐ ID _____
SECURED ☐ YES ☐ NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

No 212520

L.P. 1292

McGranahan & Carlson

RUSH

PROJECT DESIGNATION MC&C

SAMPLES TAKEN BY:* Emmanuel Fabiony

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
B2	2.5-3 [redacted]	01-27-89				X	23808	Brass T	~~8240~~ 418.1
	7 [redacted] - 7.5'	01-27-89				X	23809	" *	~~8240~~ void Princip. Pollut.
	8.5 - 9'	01-27-89				X	23810		~~8240~~ 2044C 418.1
	12.5' - 13'	01-27-89							~~8240~~ 2044C 418.1
	17 - 17.5'	0 "							for Sample #23815 418.1 2044
	23.5' - 24'	"							418.1 2044
	29.5 - 30'	"							418.1 2044
B3	7.5' - 8'	"							418.1 + Prin. Poll. 2044
	12' - 12.5'	"							418.1 2045
	15 - 15.5'	"							418.1 2045

20451 / 23815

8240

8270

8080

FIELD DISPOSITION: * Sample m[illegible] received with the

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

SECURED [illegible] YES ☐ NO ☐

* 4 priority pollutant [illegible] per Emmanuel 1/28/89

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Emmanuel Fabiony		1-27-89
RECEIVED FOR LABORATORY BY:* Michael Mikkelsenburg		1/28/89 12:00

METHOD OF SHIPMENT: Air Freight

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ Lab ID 21858 YES NO TAT

* PRINT NAME AFTER SIGNATURE

△ Ba, Ca, Pb by STLC requested for [illegible] per SAG 3/1/89

8240 / 8270 / 8080

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

212562

McGrenahan & Carlson RUSH

PROJECT DESIGNATION M & C

SAMPLES TAKEN BY:* Emmanuel Fabiony

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
B1	15.5'-16'	01-27-89				X	23528	Brass T.	418.1 (20464)

FIELD DISPOSITION: Samples arrived cool but ice had melted. Temp. 1°C 2/8

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED ☐ YES

FREEZER ☐ ID _____ ☐ NO

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Emmanuel Fabiony		
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael M. Rennebaum		1/28/89 12:00

METHOD OF SHIPMENT: Air Freight

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ ☐

CABINET ☐ ID _____ YES NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory

Chain of Custody Record

№ 212520

L.P. 1292

RUSH

McGranahan & Carlson

** Ba, V added per SAG on 2/7/89 per 48 hr TAT

PROJECT DESIGNATION MC&C

SAMPLES TAKEN BY:* Emmanuel Fabkeary

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	WATER GRAB	SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
B2	2.5-[redacted]	01-27-89				X	23808	Brass T.	~~TRPH~~ 418.1 (20445)
	7[redacted]-7.5'	01-27-89				X	23809	" *	~~Princip. Pollut.~~ Void (20445)
	8.5-9'	01-27-89				X	23810	"	~~TRPH~~ 418.1 (20445)
	12.5'-13'	01-27-89				X	23811	"	~~TRPH~~ 418.1 (20446)
	17-17.5'	0 "				X	23812	Analysis / Lab ID for 23805: 8278 20999	418.1 (2044
	23.5'-24'	"				X	23813	8270 21000, 8270 SIM 21001	418.1 (204
	29.5-30'	"				X	23814	20978	418.1 (204
B3	7.5'-8'	"				X	23815	** Ba, V	20450 418.1 + Princ. Poll.
	12-12.5'	"				X	23816	"	418.1 (2045
	15-15.5'	"				X	23817	"	418.1 (2045

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

* Sample was on 2nd ice that arrived with the ice melted. MM. 1/28/89

SECURED ☐ YES ☐ NO

** Ba, V Priority Pollutant (cancelled per Emmanuel 1/28/89)

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Emmanuel Fabkeary		1-27-89
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:*		DATE/TIME
Michael A. Nevenburg		1/28/89 12:00

METHOD OF SHIPMENT: Air Freight

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ SECURED

FREEZER ☐ ID _____ ☐ YES ☐ NO

CABINET ☐ ID _____

* PRINT NAME AFTER SIGNATURE

* Ba, Cu, Pb by STLC requested to be run per 48 hr TAT SAG 3/1/89

Lab ID 21858

M. M.

McLaren Environmental Engineering

11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory
Chain of Custody Record

11-12-92 No 212524

McGrath on & Carlson

RUSH

PROJECT DESIGNATION McdC

SAMPLES TAKEN BY:* Emmanuel Fakhoury

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE: WATER COMP	SAMPLE TYPE: WATER GRAB	SAMPLE TYPE: SOIL	SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
B3	17.5'-18'	01-27-89				X	23818	Brass T	418.1 (2045)
	20.5'-21'	01-27-89				X	23819	8240 (21285) 8270 (21285) 8080 (21287)	** 418.1 (2045)
B4	6'-6.5'	"				X	23820	"	418.1, ~~Pkg. Pt~~
	10.5'-11'					X	23821	"	418.1 (2045)
	13.5'-14'					X	23822	"	418.1 (2045)
	15.5'-15.5					X	23823	"	418.1 (2045)
B1	3.5-4					X	23824	"	(20460) 418.1, ~~Pkg. Pt~~
	6.5'-7'					X	23825	"	418.1 (2046)
	8'-8.5'					X	23826	"	418.1 (2046)
	12.5'-13.'					X	23827	"	418.1 (2046)

FIELD DISPOSITION:

IMMEDIATE DELIVERY ☒

STORAGE ☐ REFRIGERATOR ☐ ID _____

FREEZER ☐ ID _____

* Samples arrived cool but the ice had melted

** Sample asked to be run for 8240/8270/8080 M.N. 1/28/89 2/16/89

SECURED ☒ YES ☐ NO

* priority pollutant compounds per E.F. 1/27

RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
Emmanuel Fakhoury		
RELINQUISHED BY:*	RECEIVED BY:*	DATE/TIME
RECEIVED FOR LABORATORY BY:* Michael A. Neuenburg		DATE/TIME 1/28/89 12:00

METHOD OF SHIPMENT: Air Freight

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS ☐ STORAGE ☐ REFRIGERATOR ☐ ID _____ FREEZER ☐ ID _____ CABINET ☐ ID _____ SECURED ☐ YES ☐ NO

* PRINT NAME AFTER SIGNATURE

McLaren Environmental Engineering
11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

APPENDIX C

SOIL BORING LOGS

SOIL DRILLING LOG

SB/MW # SB-5-5A-I
D- 1310
Page 1 of 2
Sampler: T. BERGER

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL, DRAEGER
SAMPLING DATE(S) 3/22/89 START 7:30 AM FINISH 10:40 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO PARKING LOT OFF SHOEMAKER AT RAILROAD TRACKS.

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID#	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
						0.0'-0.3' Asphalt				
5	13-16-17		5.0-6.5	24661		0.0'-8.0' Clayey silty sand: dark yellowish brown (10YR 4/4); 40% fine-grained sand; 20%silt; 20% clay; slightly damp.	SC			
10	21-36-46		10.0-11.5	24662	160	8.0'-15.5' Silty sand: very dark greyish -brown (10YR 3/2); 80% very coarse to medium grained, subangular, poorly-sorted sand; 10% silt; 10% clay; >>PHC; oily. @ 8.0' hit sludge: odor	SM			Enviroplug
15	9-16-30		15.0-16.5	24663		15.5'-25.0' Clayey silt: Light yellowish brown (2.5YR 6/4); 70% silt; approximately 30% low-plastic clay; slightly damp.	CL			
20			20.0-21.5	24664						
25	14-32-50		25.0-26.5	24665		25.0'-27.0' Clayey silt: greenish grey (5GY 5/1); 70% silt; 30% clay; slightly damp.	CL			
30	21-48-50		30.0-31.5	24666	13	27.0'-34.5' Silty sand; (Continued on page 2)	SM			

SOIL DRILLING LOG

SB/MW # SB-5-5A-I
D- 1311
Page 2 of 2
Sampler: T. BERGER

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL, DRAEGER
SAMPLING DATE(S) 3/22/89 START 7:30 AM FINISH 10:40 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO PARKING LOT OFF SHOEMAKER AT RAILROAD TRACKS.

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID#	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
35	11- >50		35.0-36.5	24667		27.0'-34.5' Silty sand: greenish-grey (5G 5/1); 80% fine-grained sand; 20% silt; slightly damp.	SM			
						34.5'-40.0' Sand: greenish grey (5GY 6/1); medium-grained ; subangular to subrounded; granitic source; slightly damp.	SW			
40	12-21-27		40.0-41.5	24668						Enviroplug
45										
50	11-30-44		50.0-51.5	24669		40.0'-58.0' Clayey silt: greenish grey (5G 5/1);70% silt; 30% clay; slightly damp.	CL			
55										
						58.0'-60.0' Silty sand: greenish grey (5G 6/1); 80% sand; 20% silt; medium-grained; granitic source; slightly damp.	SM			
60	20-90		60.0-61.5	24670		Boring terminated at 60.0'				TD = 60.0'

McLaren Environmental Engineering

SB/MW # SB-6-5B-I
D- 1312
Page 1 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/22/89 START 11:10 AM FINISH 1:45 PM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
5	2-3-6		5.0-6.5	24671	87	0.0'-7.0' Sand: light olive brown (2.5Y 5/4); fine-medium grained, poorly-sorted sand; minor silt; granitic source; slightly damp.	SW			
10	14-16-30		10.0-11.5	24672	15	7.0'-13.0' Clayey silt: light yellowish brown (2.5Y 6/4); 80% silt; <20% clay; minor sand; some gravel; dry.	CL			Enviroplug
15	20-50		15.0-16.5	24673	14					
20	23-50		20.0-21.5	24674	13	13.0'-29.0' Silty sand; greenish grey (5GY 5/1); 80% very fine-grained sand; <20% silt; minor clay; slightly damp.	SM			
25	33- > 50		25.0-26.5	24675	7					
30	23-50		30.0-31.5	24676	24	29.0'-35.0' Silty sand: (Continued on page 2)	SM			

SOIL DRILLING LOG

SB/MW # SB-6-5B-I
D- 1313
Page 2 of 2
Sampler: T. BERGER

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/22/89 START 11:10 AM FINISH 1:45 PM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture,Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
35	56- >60		35.0-36.5	24677	6	29.0'-35.0' Silty sand: olive (5Y 5/3); 80 % very fine grained sand; 20% silt; slightly damp.	SM			
						35.0'-37.0' Sand: olive grey (5Y 5/2); fine to very fine grained sand; poorly-sorted; subrounded; granitic source;slightly damp.	SW			
40	30-100		40.0-41.5	24678	6.5	37.0'-48.0' Silty sand: dark greenish grey (5BG 4/1); 80% fine to medium grained sand; poorly-sorted; 20% silt; slightly damp.	SM			Enviroplug
45										
50	33- >100		50.0-51.5	24679	6.7	48.0'-57.0' Sandy silt: greenish grey (5GY 5/1); 70% silt; < 30% very fine grained sand; minor clay; slightly damp.	ML			
55						57.0'-60.0' Silty sand: greenish grey (5G 6/1); 80% fine to very coarse grained sand; poorly-sorted; subangular to subrounded; 20% silt; dry.	SM			
60	40-80		60.0-61.5	24680	5	Boring terminated at 60.0'				TD = 60.0'

McLaren Environmental Engineering

SB/MW # SB-7-5B-E
D- 1314
Page 1 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/23/89 START 7:15 AM FINISH 9:05 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID#	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
						0.0'-4.0' Silty clay: yellowish brown (10YR 5/4); 30-40% silt; 60-70% clay; dry.	CL			
5	5-8-10		5.0-6.5	24681	23	4.0'-8.0' Silty sand: olive grey (5Y 4/2); 60% very fine grained sand; 30% silt; 10% clay; slightly damp.	SM			
10	30-35-40		10.0-11.5	24682	380	8.0'-14.0' Silty sand: greenish grey (5GY 5/1); 80% very fine grained sand; < 20% silt; minor clay; slightly damp.	SM			Enviroplug
15	12-39-50		15.0-16.5	24683	440	14.0'-23.0' Silty sand: greenish grey (5GY 5/1); fine to medium grained sand; poorly sorted; subrounded; granitic source; slightly damp.	SM			
20	22-27-50		20.0-21.5	24684	250					
25	23-34-49		25.0-26.5	24685	140	23.0'-29.0' Silty sand: greenish grey (5GY 5/1); 80% very fine grained sand; < 20% silt; minor clay; slightly damp.	SM			
						29.0'-33.0' Clayey silt:				
30	12-16-24		30.0-31.5	24686	70	(Continued on page 2)	MH			

SB/MW # SB-7-5B-E
D- 1315
Page 2 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/23/89 START 7:15 AM FINISH 9: 05 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
						29.0'-33.0' Clayey silt: greenish grey (5BG 5/1); 70% silt; < 30% clay; minor fine grained sand; slightly damp.	MH			
35	29-50		35.0-36.5	24687	110	33.0'-49.0' Sand: greenish grey (5GY 5/1); very fine to coarse grained sand; poorly-sorted; subangular to subrounded; granitic source; slightly damp.	SW			
40	45-50		40.0-41.5	24688	230	@ 40.0' Sand is moderately well sorted; medium to coarse grained; subrounded.				Enviroplug
45						Water @ 48.0'				
50	14-37-41		50.0-51.5	24689	52	49.0'-50.0' Silty sand: greenish grey (5GY 5/1); 80% very fine grained sand; <20% silt; minor clay; slightly damp.	SM			TD = 50.0'
55						Boring terminated at 50.0'				
60										

McLaren Environmental Engineering

SB/MW # SB-B3 / SB-8-2-B
D- 1305 / 1307
Page 1 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 1/27/89 START 7:15 AM FINISH 9:05 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO SB-B3: 0.0'-23.0'; SB-8-2-B: 23.0'-TD

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
5					350	0.0'-11.0' No sample recovered in upper 5.0'; hand auger to verify underground utility clearance; upper 5.0' contains sludgy material.				
			7.5-8.0	23815	305	@ 3.0' Soil was dark in color, strong odor, sludgy material, stains, strong peteroleum odor.				
					250					
10					250					Enviroplug
			12.0-12.5	23816	20					
						11.0'- 18.0 Loamy fine sand: dark stains; odor.	SM			
15			15.0-15.5	23817						
			17.5-18.0	23818						
		07								
		05								
		07								
20			20.5-21.0	23819		18.0'-19.5' Sand: coarse grained. 19.5'-23.0' Sand: very coarse grained.	SP/SM			
						23.0'-30.0' Sand: medium to very coarse grained; poorly-sorted; slightly damp. (lost samples twice)	SW			
25	33-50		25.0-26.5	24693						
30	29-50		30.0-31.5	24694	20	(Continued on page 2)				

SOIL DRILLING LOG

SB/MW # SB-8-2-B
D- 1316 / 1317
Page 1 of 2
Sampler: T. BERGER

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/24/89 START 2:05 PM FINISH 3:45 PM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID#	Tip reading (ppm)	Soil Description Color, Texture, Moisture,Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
						30.0'-34.0' Sand: pale olive (5Y 6/3); very fine to medium grained; poorly-sorted; sub-angular to subrounded; granitic source; slightly damp.	SW			
35	18-38-50		35.0-36.5	24695	8.3	34.0'-37.0' Silty sand: olive grey (5Y 5/2); 70% fine to medium grained sand; sub-rounded; 20% silt; 10% clay; damp.	SM			
40	32-50		40.0-41.5	24696	45	37.0'-60.0' Sand: greenish gray(5GY 5/1); very fine to very coarse grained;poorly sorted; gravel up to5 mm.; damp.	SW			Enviroplug
45	50-50		45.0-46.5	24697	10.5					
50	50-50		50.0-51.5	24698	27	@ 50.0' gravel size increasing to 1 cm.				
55	32-50		55.0-56.5	24699		@ 55.0' gravel absent; predominantly medium grained sand.				
60	41-50		60.0-61.5	24700		Boring terminated at 60.0'				TD = 60.0'

McLaren Environmental Engineering

SB/MW # SB-9-3-E
D- 1318
Page 1 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/24/89 START 12:25 PM FINISH 1:45 PM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
5	5-4-6		5.0-6.5	24701	38	0.0'-8.0' Silty sand: dark olive grey (5Y 3/2); 70% very fine grained sand; < 30% silt; minor clay; slightly damp.	SM			
10	10-20-29		10.0-11.5	24702	12.5	8.0'-14.0' Clay: olive (5Y 4/3); minor silt; slightly damp.	CL			Enviroplug
15	13-25-26		15.0-16.5	24703		14.0'-35.0' Silty sand: olive grey (5Y 5/2); 80% fine grained sand; 20% silt; slightly damp.	SM			
20	14-22-27		20.0-21.5	24704	24	@ 20.0' coarse fraction increasing.				
25	12-23-27		25.0-26.5	24705	33	@ 25.0' coarse fraction is dominant, with gravel up to 5mm.; color more olive.				
30	16-21-25		30.0-31.5	24706	12	(Continued on page 2)				

SB/MW # SB-9-3-E
D- 1318
Page 2 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/23/89 START 11:15 AM FINISH 12:40 PM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture,Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
						(Continued from page 1)				
						@ 30.0' olive grey (5Y 5/2); Sand is predominantly medium grained and subrounded.	SM			
35	18-24-50		35.0-36.5	24707	3	35.0'-40.0' Silty sand: dark greenish grey (5G 4/1); 70% very fine grained sand; 20% silt; 10% clay; slightly damp.	SM			
40	24-50		40.0-41.5	24708	4	40.0'-60.0' Sand: olive grey (5Y 5/2); Medium grained and subrounded;slightly damp.	SP			Enviroplug
45										
50	26-50		50.0-51.5	24709	4.5	@ 50.0' dark greenish grey (5G 4/1);coarse fraction increasing to 40%; some gravel up to 1 cm.; slightly damp.				
55										
						@ 60.0' predominantly medium-grained sand.				
60	37-50		60.0-61.5	24710	3.9	Boring terminated at 60.0'				TD = 60.0'

McLaren Environmental Engineering

SB/MW # SB-10-4-A
D- 1320
Page 1 of 2
Sampler: T. BERGER

SOIL DRILLING LOG

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/24/89 START 9:20 AM FINISH 11:00 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID#	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
5	3-4-6		5.0-6.5	24711	82	0.0'-8.0' Silty sand:olive grey (5Y 5/2); 70% very fine grained sand; 20% silt; 10% clay; slightly damp.	SM			
10	4-9-18		10.0-11.5	24712	130	8.0'-14.0' Sandy silt: dark greenish grey (5GY 4/1); 60-70% silt; 30% very fine to medium grained; poorly sorted sand; 10-20% clay; slightly damp.	ML			Enviroplug
15	18-28-41		15.0-16.5	24721	66	14.0'-18.0' Clayey silt: greenish grey (5GY 5/1); 70% silt; < 30% clay; minor sand; slightly damp.	CL			
20	10-16-21		20.0-21.5	24722	38	18.0'-24.0' Silty sand: light olive grey (5Y 6/2); 80% very fine grained sand; 20% silt; slightly damp.	SM			
25	11-31-28		25.0-26.5	24723	33	24.0'-30.0' Sand: olive grey (5Y 5/2); fine grained; moderatly 1well sorted; subrounded; granitic source; slightly damp.	SP			
30	13-19-27		30.0-31.5	24724	120					

SOIL DRILLING LOG

SB/MW # SB-10-4-A
D- 1323
Page 2 of 2
Sampler: T. BERGER

PROJECT McGRANAHAN 4.0 LOCATION SANTA FE SPRINGS, CA
ELEVATION GRADE MONITORING DEVICE TIP, LEL
SAMPLING DATE(S) 3/24/89 START 9:20 AM FINISH 11:00 AM
SAMPLING METHOD CA. MOD. SPLT. SPN. SUBCONTRACTOR & EQUIPMENT GREGG / B-53
MEMO

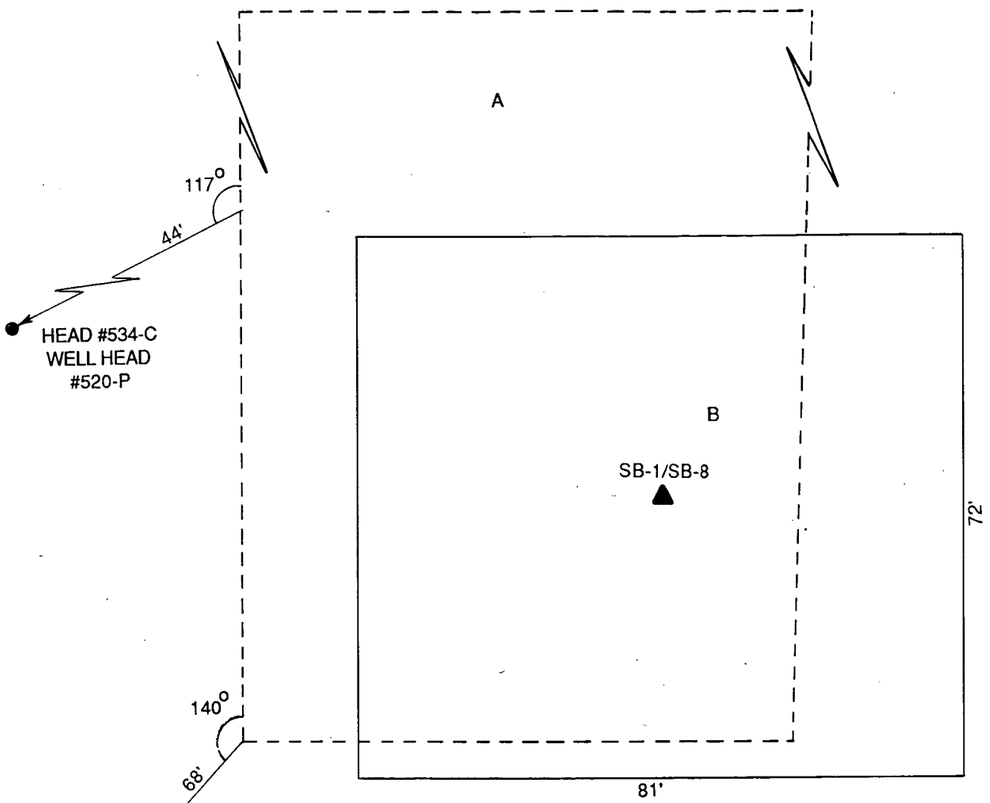
Depth Below Surface(ft.)	Penetration Results: Blows 6"-6"-6"	Penetration Results: BPF	Sampler Depth Interval (ft.)	Sample ID #	Tip reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Borehole Abandonment/ Well Construction Details
35	13-32-38		35.0-36.5	24725	22	30.0'-38.0' Silty sand: greenish grey (5GY 5/1); 80% sand; poorly sorted; subrounded; granitic source; 20% silt. @ 35.0' color more olive; coarse fraction increasing.	SM			
40	28-50		40.0-41.5	24726	6					Enviroplug
45						38.0'-57.0' Silty sand: dark greenish grey (5GY 4/1); 80% sand; poorly sorted; subrounded; granitic source; 20% silt; slightly damp.	SM			
50	18-30-50		50.0-51.5	24727	5.8	@ 50.0' medium grained sand; minor silt.				
55						57.0'-60.0' Sand: greenish grey (5G5/1); fine to very coarse grained; poorly sorted; subangular to subrounded; 20% gravel; dry.	SW			
60	38-50		60.0-61.5	24728	8.5	Boring terminated at 60.0'				TD = 60.0'

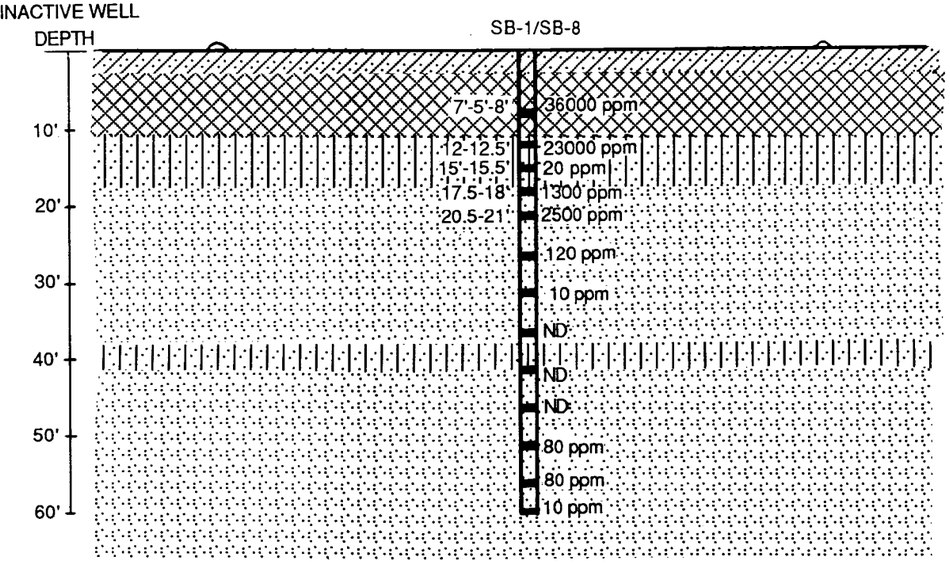
McLaren Environmental Engineering

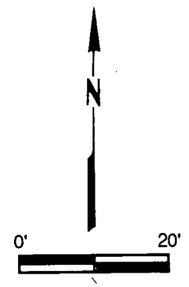
APPENDIX D

CROSS SECTIONS

APPENDIX D FIGURE 1
SOIL CONTAINING CRUDE OIL IN
AREA 2 SUMP B



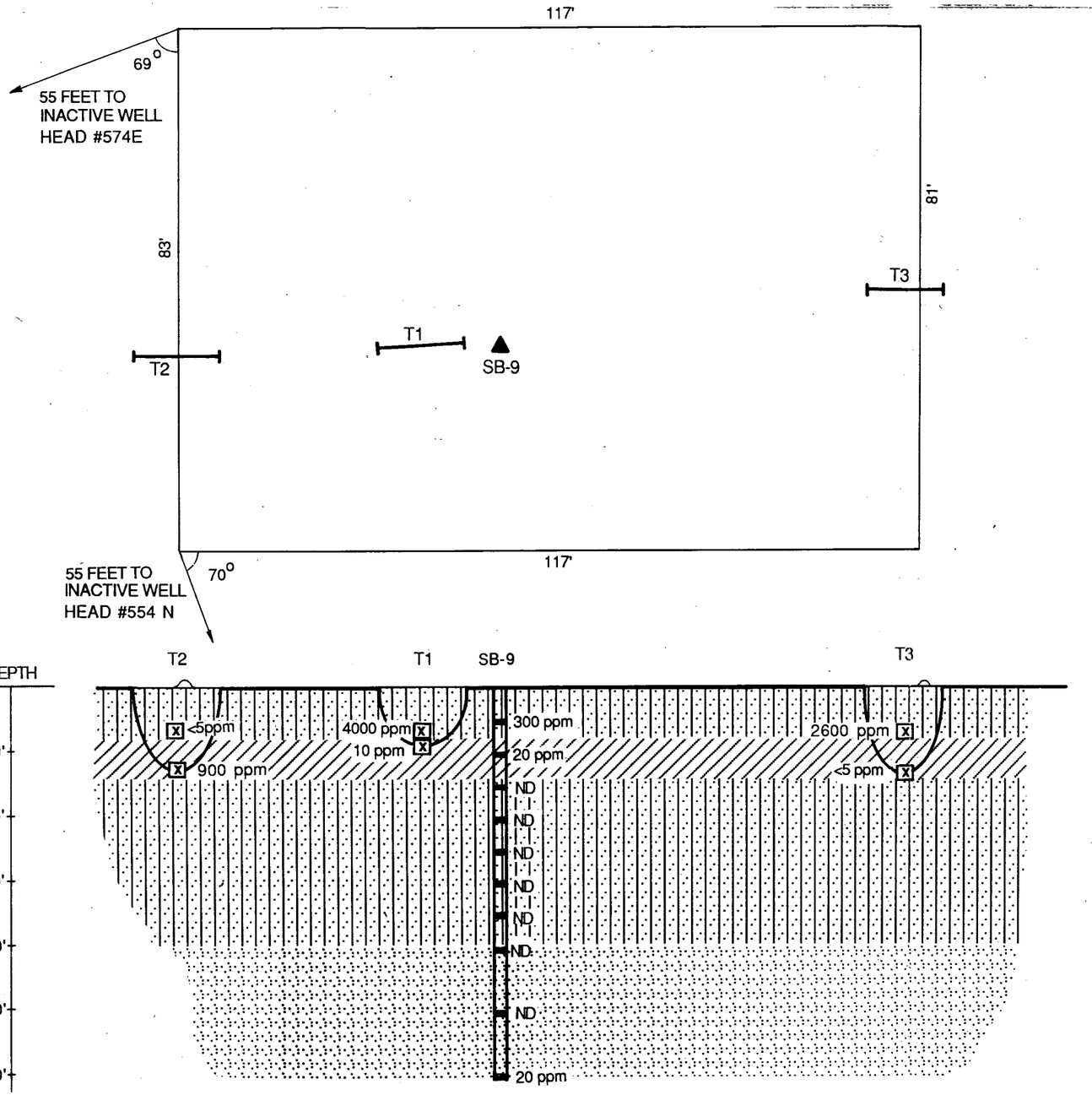




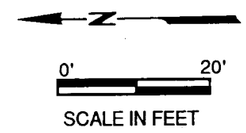
LEGEND

T1A3E51	SAMPLE ID
T-1	TRENCH
X	SOIL SAMPLE LOCATION
	SOIL BORING
	SAND (SW)
	SLUDGY MATERIAL
	SANDY CLAY (SP/SM)
	SILTY SAND (SM)

APPENDIX D FIGURE 2
SOIL CONTAINING CRUDE OIL IN
AREA 3 SUMP E

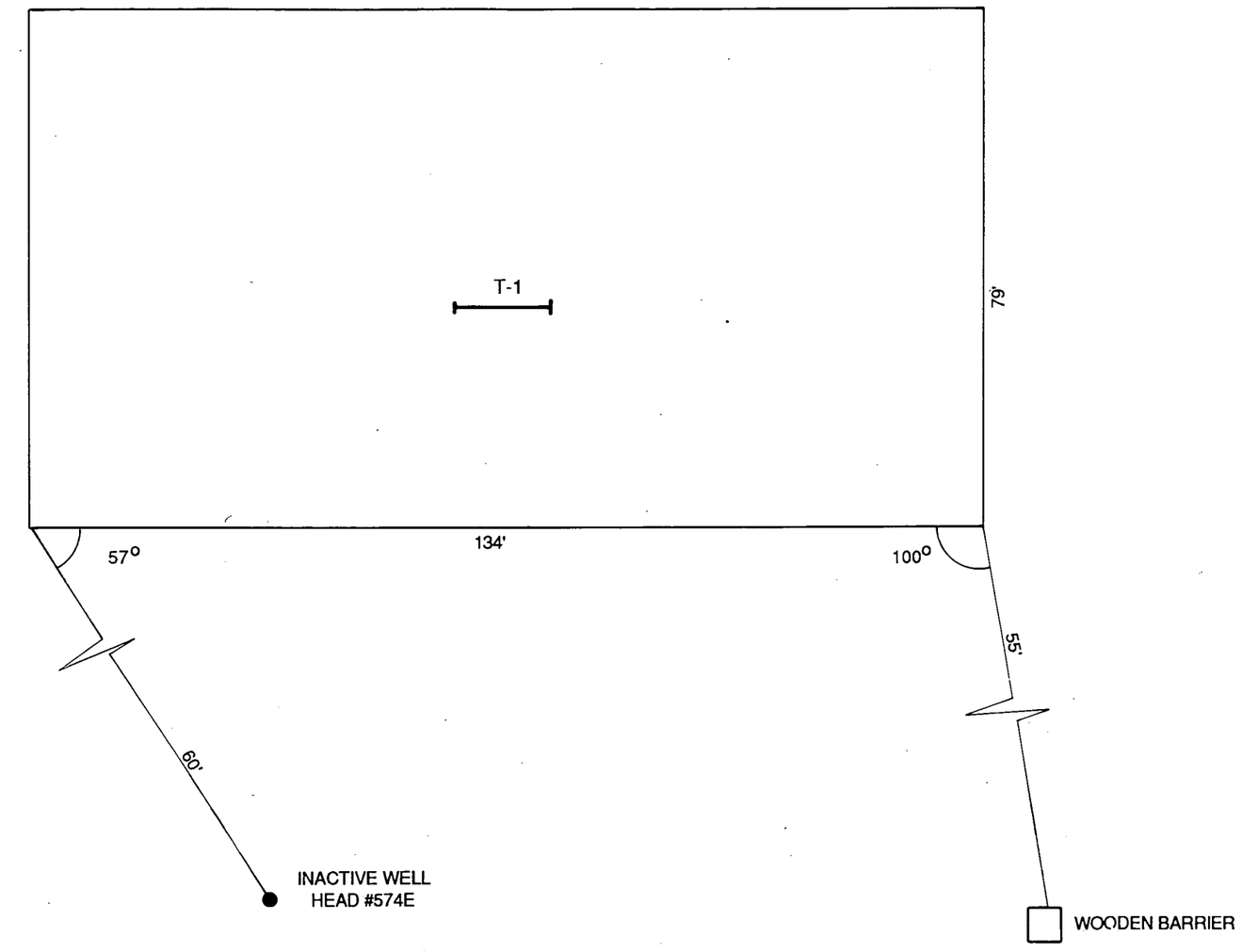


TRENCH	DEPTH (FT)	SAMPLE IDENTIFICATION	TPH (ppm)
T1	6 8	T1A3ES1 T1A3ES3	4000 10
T2	6 12	T2A3ES1 T2A3ES1	<5 900
T3	6.5 12.5	T3AES1 T3A3ES3	2600 <5

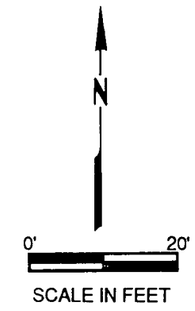


LEGEND

T1A5BES1	SAMPLE ID
T-1	TRENCH
	SOIL SAMPLE LOCATION
	SOIL BORING
	SAND (SW)
	SILTY CLAY (CL)
	SILTY SAND (SM)



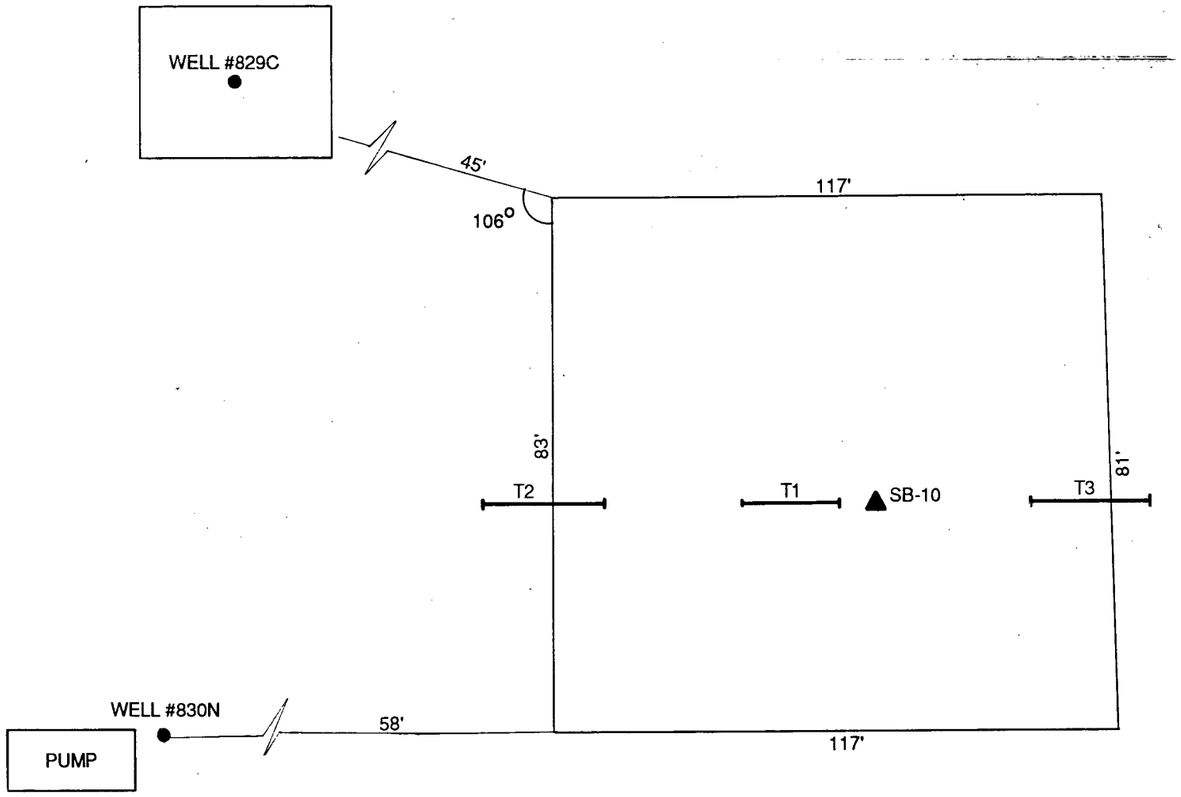
TRENCH	DEPTH (FT)	SAMPLE IDENTIFICATION	TPH (ppm)
T1	5	T1A3FS1	11000
T1	13	T1A3FS3	<5



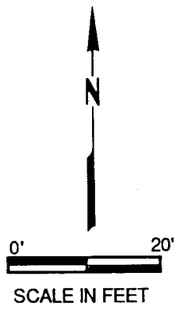
LEGEND

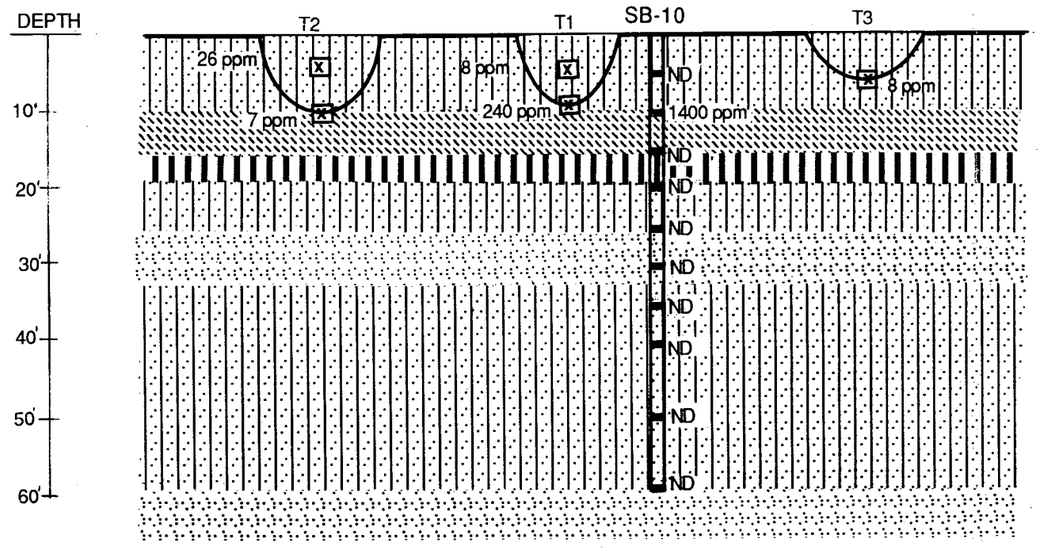
T1A5BES1	SAMPLE ID
T-1	TRENCH
X	SOIL SAMPLE LOCATION
	SAND (SW)
	SANDY CLAY (CL)

APPENDIX D FIGURE 4
SOIL CONTAINING CRUDE OIL IN
AREA 4 SUMP A



TRENCH	DEPTH (FT)	SAMPLE IDENTIFICATION	TPH (ppm)
T1	5.5	T1A4AS1	8
T1	9	T1A4AS3	240
T2	6	T2A4AS1	26
T2	10	T2A4AS2	7
T3	6	T3A4AS1	8





LEGEND

T1A5BES1 — SAMPLE ID

T-1 — TRENCH

SOIL SAMPLE LOCATION

SOIL BORING

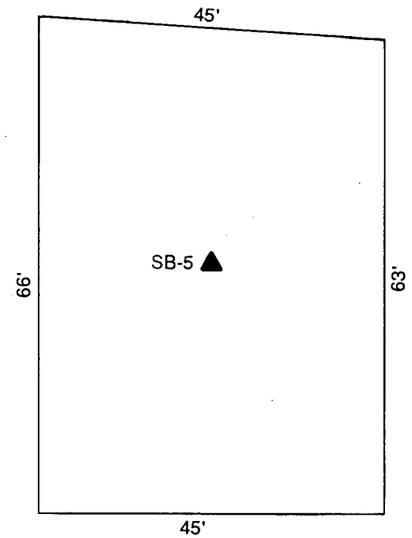
SAND (SW)

CLAYEY SILT (MH)

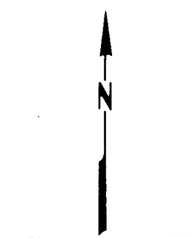
SILTY SAND (SM)

SANDY SILT (SP)

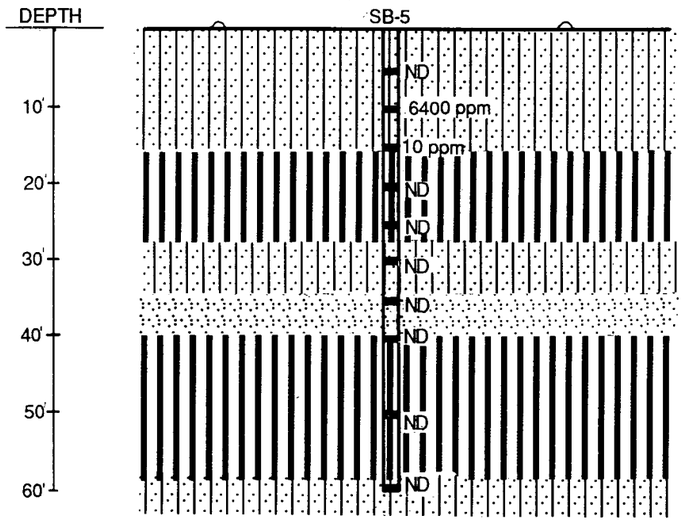
APPENDIX D FIGURE 5
SOIL CONTAINING CRUDE OIL IN
AREA 5A SUMP I



WELL HEAD #712C



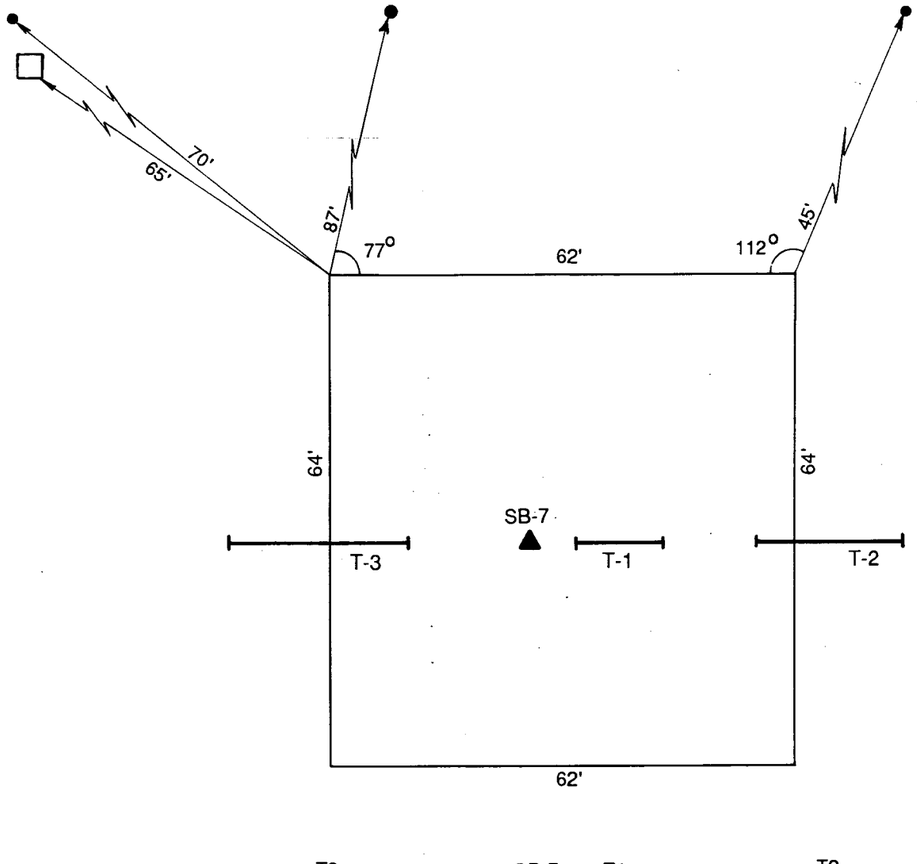
SCALE IN FEET



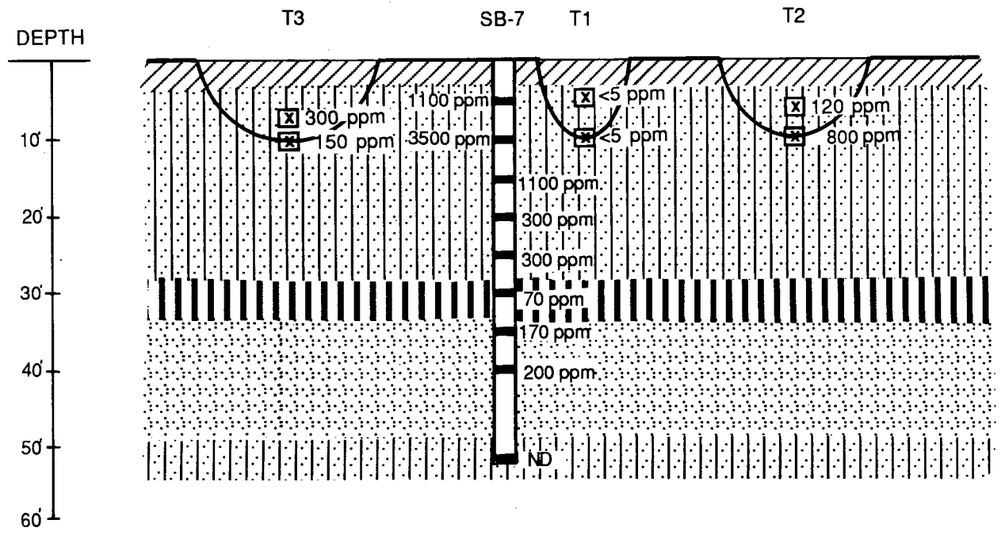
LEGEND

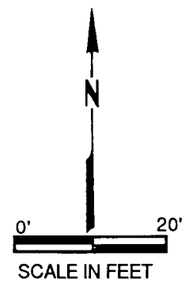
- SOIL SAMPLE LOCATION
- SOIL BORING
- SAND (SW)
- SILTY SAND (SM)
- CLAYEY SILT (MH)

APPENDIX D FIGURE 6
SOIL CONTAINING CRUDE OIL IN
AREA 5B SUMP E



TRENCH	DEPTH (FT)	SAMPLE IDENTIFICATION	TPH (ppm)
T1	5	T1A5BES1	<5
T1	12	T1A5BES3	<5
T2	7.5	T2A5BES1	120
T2	12	T2A5BES3	800
T3	9	T3A5BES1	300
T3	11.5	T3A5BES3	150

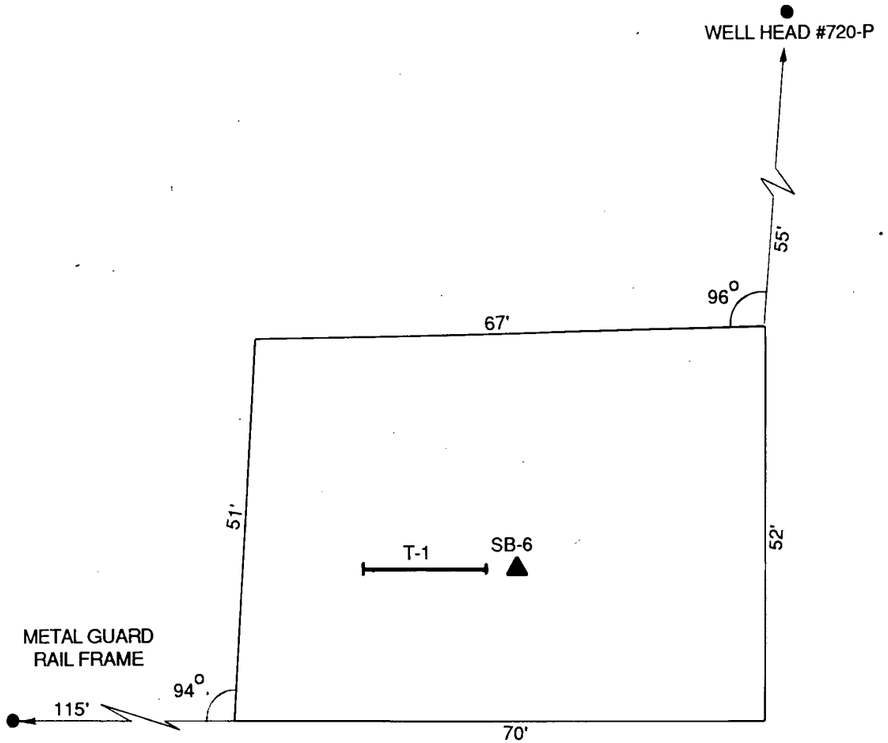




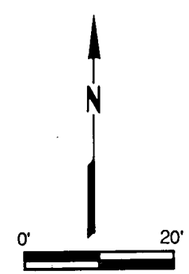
LEGEND

T1A5BES1	SAMPLE ID
T-1	TRENCH
	SOIL SAMPLE LOCATION
	SOIL BORING
	SAND (SW)
	SILTY CLAY (CL)
	CLAYEY SILT (MH)
	SILTY SAND (SM)
	POWER POLE

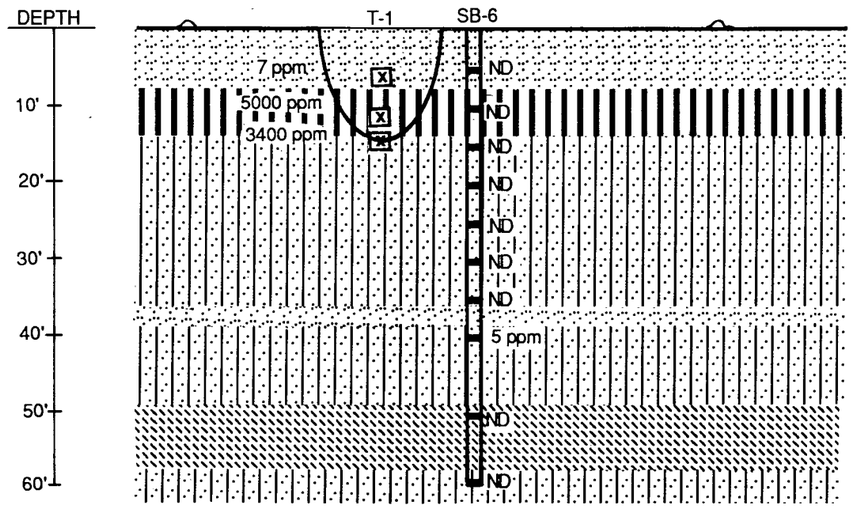
APPENDIX D FIGURE 7
SOIL CONTAINING CRUDE OIL IN
AREA 5B SUMP I



TRENCH	DEPTH (FT)	SAMPLE IDENTIFICATION	TPH (ppm)
T1	5	T1A5BIS1	7
T1	11	T1A5BIS3	5000
T1	14	T1A5BIS5	3400



SCALE IN FEET



LEGEND

T1A5BES1	SAMPLE ID
T-1	TRENCH
	SOIL SAMPLE LOCATION
	SOIL BORING
	SAND (SW)
	CLAYEY SILT (MH)
	SILTY SAND (SM)
	SANDY SILT (SP)